

LIGHT THERAPY
Burdick
EQUIPMENT

Burdick

**PHYSICAL
THERAPY
EQUIPMENT**

•
QUARTZ LAMPS

•
ZOALITES

•
ELECTRIC LIGHT
BATH CABINETS

•
MORSE WAVE
GENERATOR

•
COLONIC IRRIGATION
APPARATUS

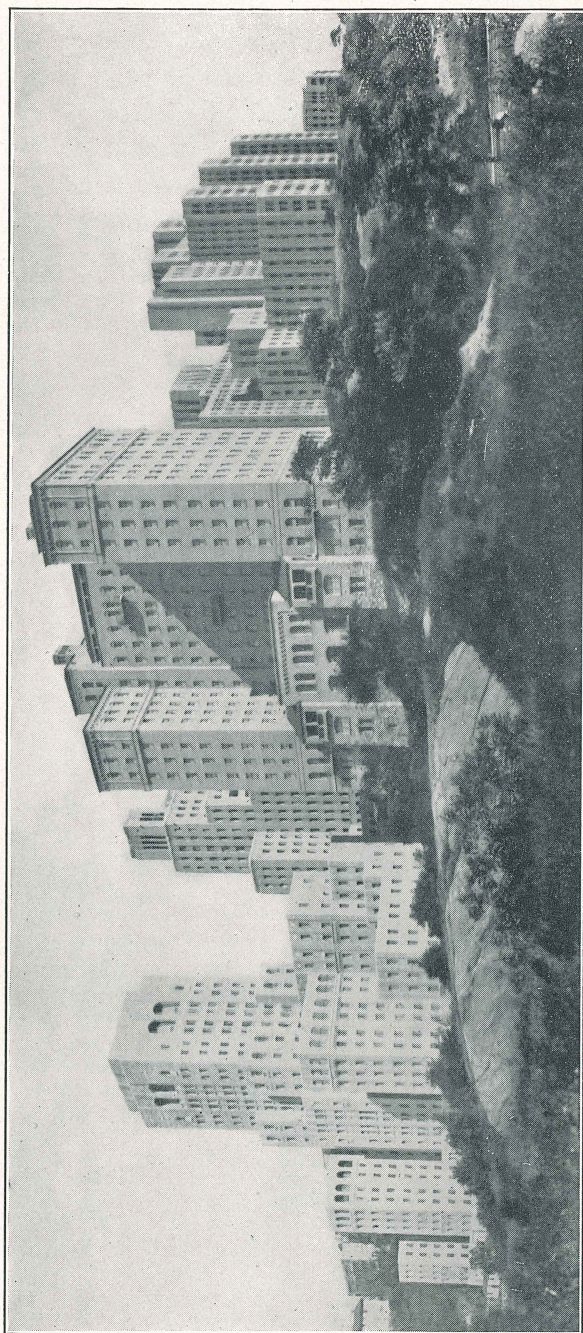
E. F. MAHADY CO.
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BURDICK Physical Therapy Equipment

GENERAL CATALOG

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THE BURDICK CORPORATION
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The Columbia Presbyterian Medical Center of New York, the world's largest medical center is Burdick equipped. It has 28 Burdick Quartz Lamps, 18 Zoalites, 3 Light Bath Cabinets, and a 4-lamp Solarium—an outstanding tribute to Burdick in an Institution where all facilities and equipment are as complete and modern as could be provided.

BURDICK LIGHT THERAPY EQUIPMENT

Physical Therapy

“One of the Triad—Medicine, Surgery, Physical Therapy”
(A. M. A.)

A LITTLE over three decades ago the Modern science of physical therapy was born. For several years the work of the early pioneers received comparatively little notice. Then came the World War, and with it world recognition and proof of the value of physical therapy in all its branches.

Something of the growing importance of physical therapy in the treatment of disease can be appreciated from the following:

1. The following world-famed institutions are using Burdick Light Therapy Equipment:

Mayo Clinic
Johns Hopkins Hospital
Medical Center, New York City
and thousands of other leading hospitals.

2. In October of 1926 the *American Medical Association* reporting through its Council on Physical Therapy in the *American Medical Association Journal* definitely recognized Physiotherapy in the following statement:

“Physical Therapy must be recognized as a definite part of medicine, practiced and controlled by graduate physicians. It should be used only as one of the *triad of medicine, surgery and physical therapy*.”

3. The *Medical Society of the State of New York*, through its Committee on Physical Therapy recently published an article of which the following is an extract:

“Physical Therapy rightfully forms part of the practice of medicine and should be given the same consideration and study as *materia medica* and surgery, or any other division of the healing art.”

I

Air-cooled Quartz Lamps

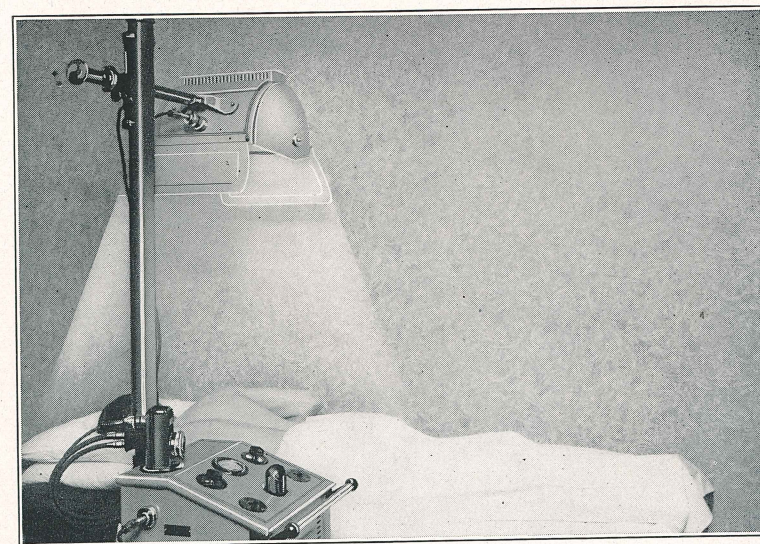
Indications for General Body Irradiation

DURING the last few years, the mode of action of the Ultra-violet rays has received very close attention by the physicist, as well as the clinician. It is now known that the clinical results observed are caused by (1) the chemical action of the long wavelengths acting upon the ergosterol in the skin by which process Vitamin D is synthesized; (2) a regulatory action upon mineral metabolism—calcium, phosphorus, iron, etc.; (3) a sedative and analgesic action on the sympathetic nervous system; (4) an irritant action or the erythema, bringing an increased flow of blood into the skin; (5) the germicidal action of the shorter wavelengths; (6) blood changes—increased number of white and red cells; (7) increased oxidation; (8) stimulation of the endocrine system.

Ultra-violet is useful in a large number of conditions because it is a natural method of restoring to the body the elements of which it has been robbed by civilization and artificial life. By its stimulant action Ultra-violet builds up the sick body so that disease can be more readily overcome.

Air-cooled Ultra-violet therapy is indicated in run down conditions and where there is mineral imbalance. A few of the more common of these disorders follow:

Rickets	Wounds
Tetany	Fractures
Tuberculosis	Osteomyelitis
Anemia	Burns
Malnutrition	Toxemia of pregnancy
Bronchitis	Hyperemesis gravidarum
Whooping cough	Boils
Pre- and postoperative	Carbuncles
Convalescence	



The New Super-Standard Lamp in combination with the Ever-Clear Water-cooled Lamp in use in the offices of a well known Chicago, Ill. physician.

Hay Fever	Eczema
Tubercular conjunctivitis	Herpes Zoster
Arthritis	Pruritis
Acne Rosacea	Psoriasis
Acne Vulgaris	Urticaria
Alopecia Areata	Ulcers
	Mucous Colitis

It must be remembered that Air-cooled Ultra-violet is a specific in but a few conditions, but that when properly applied, it is a most powerful adjuvant in a host of disorders.

We will be glad to send you a copy of the new book "Ultra-violet in the Treatment of Disease" free upon request. This is an authoritative treatise on the indications for and technic of treatment with Ultra-violet light.

Burdick Air-cooled Quartz Lamps Professional Models

BURDICK builds two office models of Air-cooled Quartz Mercury Arc Lamps—the Super-Standard Model and the Portable Bedside Unit. They also manufacture a Prescription Model Quartz Mercury Arc Lamp.

Before taking up these models separately, we wish to present certain features which are distinctive and which are common to all types of Burdick lamps.

The Burner

The High Intensity Uviarc in quartz is used in all Burdick Professional Ultra-violet Lamps. This burner was developed by the Cooper-Hewitt Laboratories who may rightfully claim the distinction of bringing the mercury arc quartz burner to a degree of efficiency bordering on perfection.

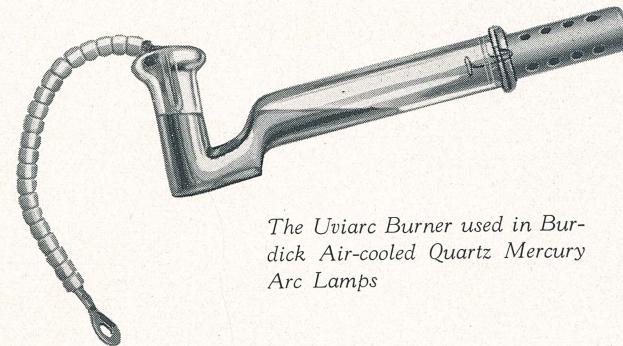
The Uviarc burner consists of a quartz tube containing mercury in a vacuum. This

mercury lies in a well at the cathode end of the burner. The other, or anode end, is supplied with a tungsten target. The construction is simple.

With this burner there is no danger of ruining the vacuum, and thus spoiling the burner, by operating at high intensity so that a maximum Ultra-violet output can be expected. This is possible because the metal lead-in wires are connected to the fused quartz through intermediate steps of glass with decreasing coefficients of expansion. This forms a vacuum seal with a capacity for withstanding extremely high temperatures.

The Uviarc burner is easily started. A single slight tip of the burner suffices to make the arc.

The Uviarc burners used in the Burdick Super-Standard Air-cooled and Water-cooled Lamps are made of the



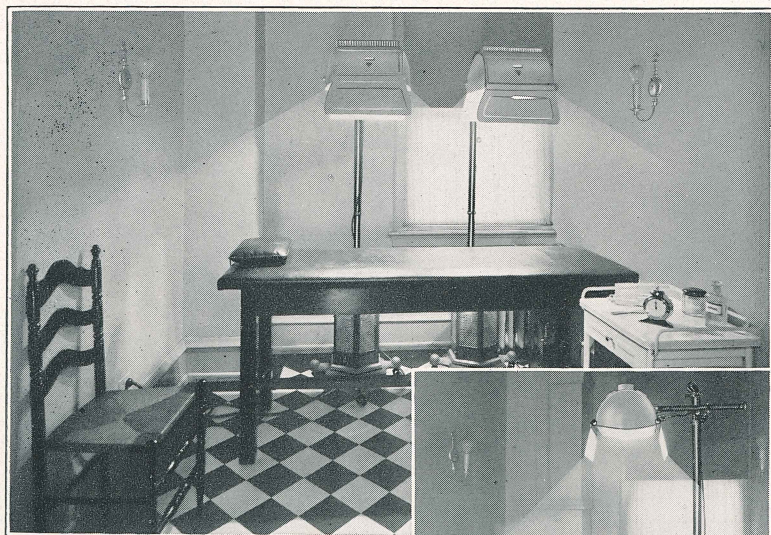
The Uviarc Burner used in Burdick Air-cooled Quartz Mercury Arc Lamps

purest fused quartz by a special patented electro vacuum furnace process. They are fire polished to the highest degree of brilliancy both inside and outside which means that the ratio of depreciation of the burner is reduced to the minimum. This is very important because if the inner surface of the tube is not well polished, foreign material, such as tungsten or silicon dioxide, will deposit on the surface and screen out the desired Ultra-violet radiations.

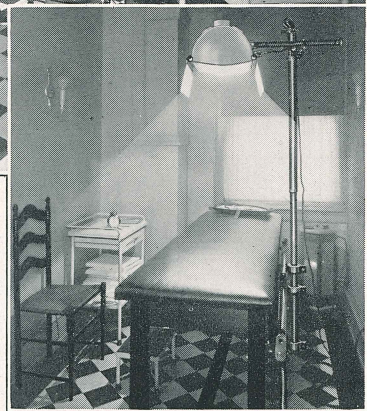
The fact that the Uviarc burner uses a tungsten electrode simplifies its construction materially, giving a long,

straight radiating surface from which reflection is absolutely unobstructed. The burner is also cooled by direct radiation which eliminates obstructive fins. All this means increased efficiency. Incidentally, simple construction makes cleaning the burner very easy.

The fact that the burner used in the Burdick Super-standard and Portable Air-cooled Lamps is horizontal makes it possible to irradiate a patient on a treatment table *evenly* with the rays striking the body at right angles. This is very important for full efficiency.



In the offices of O. Clayman Campbell, M. D., Philadelphia, Pa. The upper picture shows a treatment room where general irradiation is done. The lower picture shows a room for irradiation of local conditions.



Controls

Burdick Super-Standard and Portable Air-cooled Quartz Mercury Arc Lamps, as well as all Burdick Water-cooled Lamps, are provided with a voltmeter and voltage

regulator for accurate control of dosage.

We feel that it is impossible to overemphasize the importance of these control features in instruments of such high efficiency where the

treatments are measured in seconds and minutes and where results depend upon accurate dosage.

It is common knowledge that the line voltage varies considerably. In the daytime it will naturally be higher than at night, when electricity is generally in use. Other factors may, at any time, cause such a fluctuation as to greatly lessen the Ultra-violet radiation intensity and, consequently, largely nullify the treatment.

By a glance at the voltmeter the physician can ascertain the exact voltage activating the mercury arc burner, and if he observes a fluctuation, the voltage regulator enables him to correct it immediately.

Finish

Burdick equipment is distinguished by its beautiful finish—a soft grey, gleaming lacquer that is as durable as it is appealing. All finishes baked to prevent cracking.

Metal treated to prevent deterioration or rust.

Workmanship

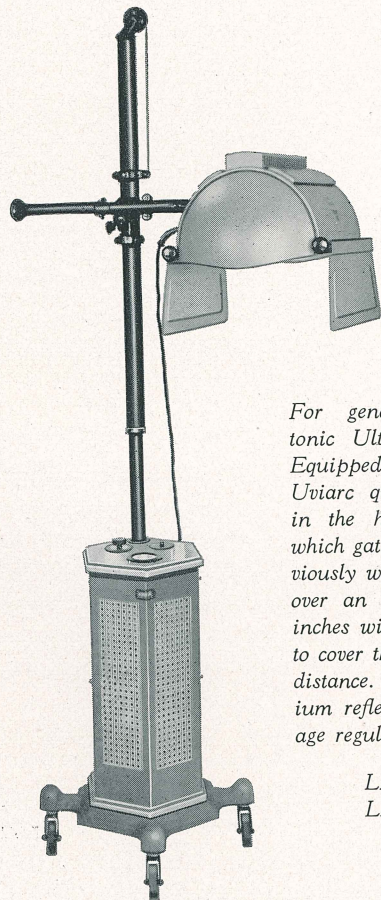
Burdick equipment is built with unusual attention to the niceties of detail by expert craftsmen. As the lamps leave the factory they are fully guaranteed against defective material and defective workmanship, so that they may be bought with that assurance which comes from conscientious manufacture—the kind upon which reputation is established and perpetuated.

Inspection and Testing

In addition to all of the care used in the manufacture and assembly of Burdick products, not one piece is shipped from the factory until it has been thoroughly tested and inspected.

This assures all Burdick users of quality equipment, thoroughly tested and backed by a guarantee that insures complete satisfaction to the customer.

The New Super-Standard Air-cooled Lamp



For general irradiation with tonic Ultra-violet wave lengths. Equipped with the high intensity Uviarc quartz burner, mounted in the high intensity reflector which gathers in all the rays previously wasted and projects them over an area approximately 22 inches wide and of ample length to cover the patient at 3 feet skin distance. Provided with chromium reflector, voltmeter and voltage regulator.

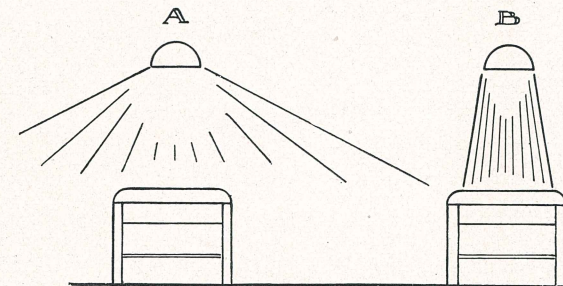
LA-423 for A. C.
LA-123 for D. C.

Why the New Super-Standard Lamp is Superior

IN the last few years the use of Ultra-violet has continually increased in hospitals, and physician's offices. The number of patients treated has frequently become so large that there has arisen a need for more intense Ultra-violet Lamps with which shorter treatments could be given. When this need became generally felt, Burdick engineers had been working

on the problem for many months, because they realized that if a more intense lamp, which would cost no more could be produced, it would mean a great saving in time and expense to the doctor. They finally achieved this by discovering a method of concentrating the radiation, so that what had formally been wasted could now be used.

The reclamation of the



In the above drawing, notice how the rays from A, an ordinary Ultra-violet Lamp, are spread over a very large area—totalling from 40 to 50 square feet. Notice also that the rays from B, the new Burdick Super-Standard Lamp are concentrated over an area 7 feet by 22 inches—the size of the average treatment cot. Thus, the waste rays are saved, increasing the intensity 100%.

waste rays produced an increase of over 100 percent in intensity. From the diagram you can see how this reclamation was effected. In many types of Quartz Mercury Vapor Lamps the radiation from one lamp at 3 feet skin distance spreads over an area of from 40 to 50 square feet. With the new Burdick Super-Standard Lamp, the rays are reflected so that they spread over an area the size of an ordinary treatment cot—7½ feet long by 22 inches wide—less than 14 square feet. Naturally the rays are more intense *where they are wanted*. This cuts the treatment time in half.

Non-tarnish Reflectors

Constant reflecting intensity is assured by the chromium plated inner reflector.

Shadowless Reflection

For years, it has been one of the greatest ambitions of the conscientious manufacturers of Ultra-violet Lamps to produce a lamp which

would give a perfectly even spread of rays without streaks and shadows. A very close approach to this ideal has been attained in the new Super-Standard Lamp. No supports or wiring obstruct the field of reflection.

Double Wall Casing

A double wall casing permits more efficient reflection and also helps to keep the lamp cooler.

Full Width Ventilators

Full width ventilators keep the casing cool and add to the grace of its lines.

Exterior Shutters

These shutters protect the patient's eyes while the lamp is building up. They can also be used to limit the field of irradiation, if desired.

Skin Distance Tape

So that the physician or his technician can always tell at a glance the exact burner

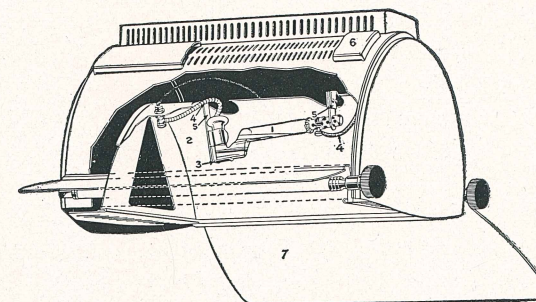


Diagram of the Super-Standard Casing.

- | | |
|-------------------|-----------------|
| 1. Uviarc burner. | 5. Supports. |
| 2. Reflector. | 6. Ventilators. |
| 3. Shelf Support. | 7. Shutters. |
| 4. Wiring. | |

to skin distance, a steel tape with spring return has been mounted conveniently on one end of the casing.

Mobility and Adaptability

The story of the Super-Standard Lamp would not be complete without a description of the stand which carries it. This is the famous Burdick counter-balanced upright, mounted on rubber-tired casters upon which it can be easily and silently moved. The upright is adjustable from a height of 45 to 75 inches, and is finished

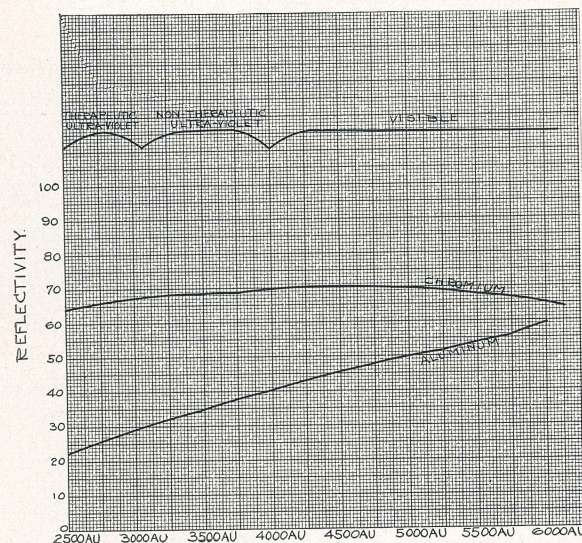
in black enamel with recessed track of nickel.

The cross-arm supporting the casing has a 15-inch extension, sufficient for all demands. This extension arm is supported by a carriage and, together with the casing, they form a ball-bearing swivel unit which may be rotated on any horizontal plane without producing tension on the steel-wire cable. Both the carriage and the extension arm move on ball-bearing rollers in a recessed track, thus greatly reducing wear and friction. The extension

arm is equipped with a ball handle to facilitate handling; and both arm and carriage are provided with locks which hold the casing immovable during the treatment period. The Burdick stand more than meets the purpose for which it was intended. In fact to tip it over one would have to proceed very deliberately and with the exercise of considerable force.

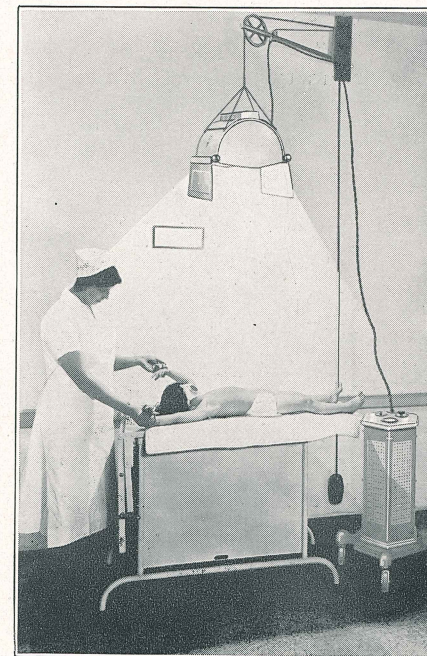
The Super-Standard uses the High Intensity Uviarc burner, and has the duotone grey lacquer finish with contrasting black and nickel stand and controls.

Burdick's reputation for beautiful equipment has been honestly won and is being scrupulously maintained. The new Super-Standard is as graceful in line as it is beautiful in finish.



This diagram indicates the relative reflecting values of aluminum and chromium for the therapeutic wavelengths of the Ultra-violet between 2500 A.U. and 3100 A.U. and for the wavelengths of less therapeutic importance up to 6000 A.U.

Wall Bracket Lamps



Wall Bracket equipment usually installed where space is limited or a permanent installation is desired.

LA-424 for A. C.
LA-124 for D. C.

FREQUENTLY we receive a request for an Air-cooled Mercury Arc Lamp that can be suspended from a wall bracket. This demand is occasioned by the fact that space is limited or that a permanent installation is desired. So Burdick developed the wall type of lamp.

The Air-cooled casing is suspended from a counter-balanced wall bracket which enables the operator to increase or decrease the skin target distance at will. A 12-inch extension arm provides ample means for adjustment to any width of bed or treatment table.

The Burdick Bedside Unit

VERY frequently a physician wishes to use Ultra-violet for a patient who is unable or unwilling to leave his home, or if he does enter a hospital, the institution may not be equipped with Ultra-violet lamps or may have lamps in the Physical Therapy Department only. In such cases the physician needs a portable Ultra-violet Lamp which he can take or have delivered to the home or hospital. (Burdick Dealers will deliver a portable lamp to your patient on receipt of your written prescription). To meet this need, Burdick designed the first portable Ultra-violet Lamp ever built.

This portable Bedside Unit is really portable. It consists, when ready for carrying, of three parts—a control box, about the size of a suitcase and fitted with a leather handle for carrying, the casing, also with a convenient handle, and the upright, a bar of gray metal. It is very easy to assemble or

knock down for carrying. The whole task takes less than two minutes time.

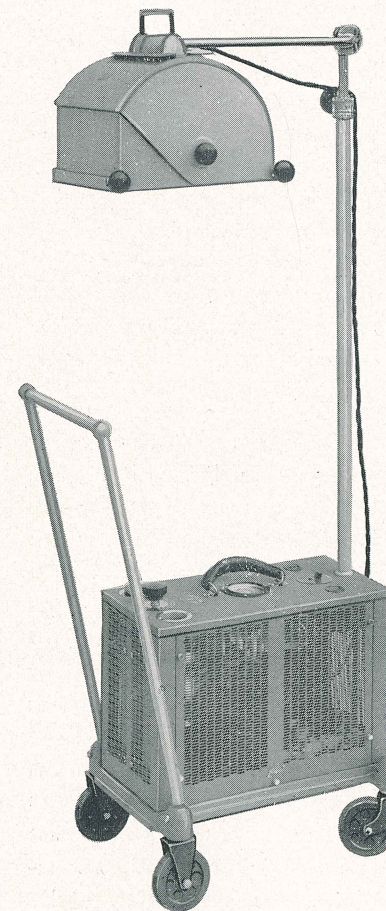
The Bedside Model is equipped with the same High Intensity Uviarc burner and the same precision control unit as the Super-Standard model. The principle of shadowless reflection is likewise maintained in this unit.

Suspension spring burner supports, collapsible stand and suitcase shape control cabinet all make for portability with utmost convenience and safety. It is also built for operation on either direct or alternating current.

Special Mobile Base

For hospital use in taking ultra-violet to the bedside, the special truck base illustrated is recommended. It is equipped with large 4" ball-bearing rubber casters. The handle is so designed and balanced that the lamp can be easily tilted when rolling over irregularities of the floor or on to an elevator.

The Burdick Portable Bedside Unit



When it is inadvisable to move your patient the Burdick Portable Air-cooled Lamp can be easily taken to the bedside. (It takes but two minutes to prepare this lamp for carrying. It can be easily wheeled about.) It has the same high intensity Uviarc burner which is used in the Super-Standard models, voltmeter and voltage regulator, double-wall construction of hood, excellent ventilation, concealed wiring and shadowless reflection. Finished in two tones of soft grey lacquer.

*LA-410 for A. C. or D. C.
PUS-82 for Truck (extra)*

The Burdick Prescription Model Quartz Mercury Arc Lamp

FOR those cases where the physician wishes to prescribe a low-in-price but efficient Quartz Mercury Arc Lamp for use in the home, Burdick now offers the Prescription Model Lamp which delivers a sufficient quantity of the therapeutic Ultra-violet wave lengths to produce a first degree erythema on the average untreated skin in from one to two minutes.

Burdick dealers keep a large number of the Prescription Model in stock at all times so it is always available to the physician for his patients. *Burdick Ultra-violet Lamps are never sold or rented to the laity except on a physician's prescription.*

The field of usefulness of this new lamp is great, both for curative and preventive purposes. Some of the cases treated by prescription of Ultra-violet Lamps are described in a book entitled,

"These Doctors Prescribed Ultra-violet," which is just off the press. This book contains the reports of cases treated with Ultra-violet under the Burdick prescription policy with a percentage analysis of the results. (It will be sent to you free of charge upon request from the Burdick Corporation or your local Burdick dealer.)

Burdick Prescription Lamps and the Burdick policy have been so successful because Burdick Lamps deliver an adequate amount of Ultra-violet and the policy prevents self-diagnosis and misuse. In many cases, home use of Ultra-violet is of vital importance in maintaining health as well as in treating disease, but we maintain that this can only be done adequately when the physician is able to explain the value of Ultra-violet and direct its use.

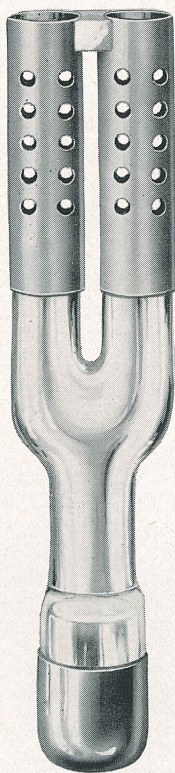
The Prescription Quartz Lamp



A low priced Air-cooled Quartz Mercury Arc Lamp for prescription. Will give a first degree erythema on the average untreated skin in from 1 to 2 minutes. Has the vertical Uviarc burner which is 60 percent as intense as the High Intensity Uviarc. Has non-tarnish reflector and sturdy floor stand with vertical extension from 32 to 63 in. and extension arm at right angles for irradiation over a bed. Casing can be tilted and used at 45°, 22½° and vertical.

*RX-20 for A.C.
RX-10 for D.C.*

The Burner



The vertical Uviarc burner used in the Prescription Model Ultra-violet Lamp.

The Prescription Model Ultra-violet Lamp uses a Uviarc Quartz Burner. It produces the same quality of spectrum as the one used in the Super-Standard Lamps but is smaller and about 60 percent as intense. It is machine built which accounts for its low cost.

The tube is of fused quartz, built along straight lines. This means that it will wear long and well. The famous type of graded seals used in all other Burdick Uviarc burners prevent leakage.

The tube is vertical. The alternating current tube is self-rectifying with two anodes. The direct current tube has one anode. Both tubes are cooled by direct radiation. They start easily. No leads or wires are required on burner, so that reflection is not interfered with.

Current is conducted by means of metal pieces welded directly to the burner. A very small amount of current is consumed, the whole lamp using less current than an electric iron.

Here are 17 reasons why the Burdick Prescription Lamp is superior.

1. The Prescription Lamp gives a first degree erythema on the average untreated skin in from one to two minutes.

2. The reflector is of chromium which will not tarnish, always retaining high efficiency.

3. The rays are projected so that they cover an area about 24 inches wide at 30 inch skin distance. Because the ray is thus concentrated, the intensity is greatly increased.

4. The reflection of the Ultra-violet is unobstructed, and because of the scientific design of the reflector, the rays are reflected evenly and without shadows.

5. The casing is tilted slightly to start the burner. It has a spring return which prevents injury to the burner.

6. The lamp is easily portable so that the doctor can carry it with him on his calls, if he desires.

7. Has extension arm at right angles to the stand

making irradiation over a bed convenient.

8. Has three lock positions so that treatment may be taken in a standing position, reclining, or in bed. The positions are (a) vertical; (b) at $22\frac{1}{2}^\circ$ and (c) at 45° .

9. The casing has doors to protect the patient's eyes while the lamp is building up, and to protect the burner from dust or breakage.

10. Casing is single walled and well ventilated.

11. Stand has vertical extension from 32 to 63 inches.

12. Casing can be used at any position around stand.

13. It is built with the control cabinet as a base, and mounted on a truck with large rubber-tired casters.

14. The extension arm folds down, so that when not in use, the lamp occupies very small space.

15. Will operate from any ordinary utility socket.

16. Lamp draws about 350 watts—about half as much as an electric iron.

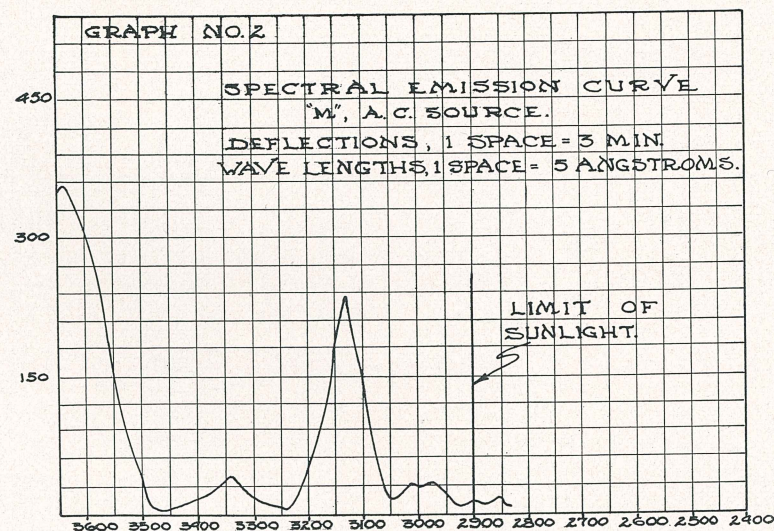
17. Finished in two tones of restful gray lacquer.

The Burdick Helthlite

THE Helthlite has been designed for the doctor who wishes to prescribe a lamp as a substitute for sunlight. It is not designed for the treatment of disease; it is for the prevention of disease and the maintenance of health. It is equipped with a generator that screens out all the short, bactericidal and therapeutic rays below 2900 A.U. It emits

an abundance of long wave length Ultra-violet such as one finds in summer sunshine and it is a source of prolific radiation in that band lying between 2900 and 3100 A.U. which has become known as the antirachitic band.

Like all Burdick Ultra-violet Lamps, the Helthlite is sold on prescription.



Spectral emission curve of the Helthlite. Note that the short Ultra-violet waves cut off at 2830 A.U. or about where sunlight ends. Observe that the peak is in the health-producing anti-rachitic region.—Tests made by the University of Michigan.

The Floor Stand Model Helthlite

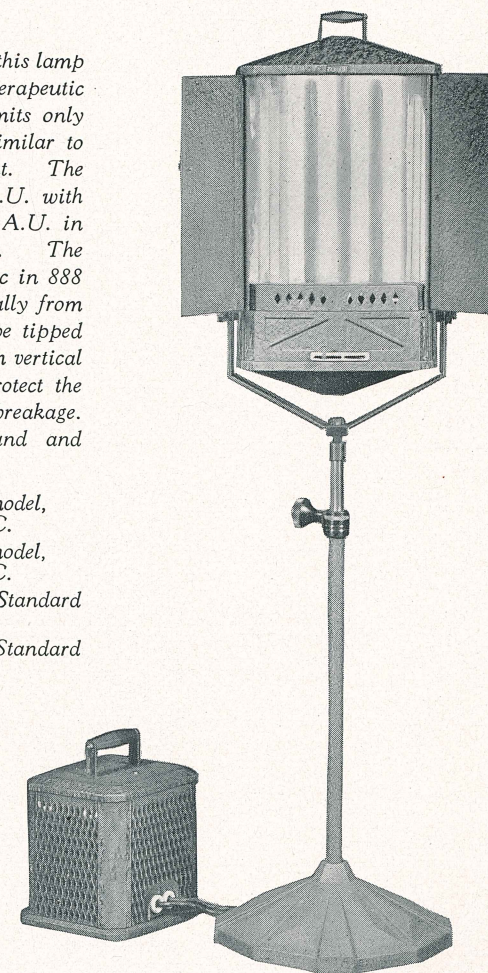
The burner employed in this lamp cuts out the short, therapeutic Ultra-violet rays and emits only the long wave lengths similar to those found in sunlight. The rays cut off at 2830 A.U. with the peak at about 3130 A.U. in the antirachitic region. The burner is a Mercury Arc in 888 glass. Adjustable vertically from 40 to 60 inches. Can be tipped to any desired angle from vertical to horizontal. Doors protect the burner from dust and breakage. Furnished in floor stand and table models.

UV-550 Floorstand model, Standard Series for A.C.

UV-250 Floorstand model, Standard Series for D.C.

UV-540 Table Model, Standard Series for A.C.

UV-240 Table Model, Standard Series for D.C.



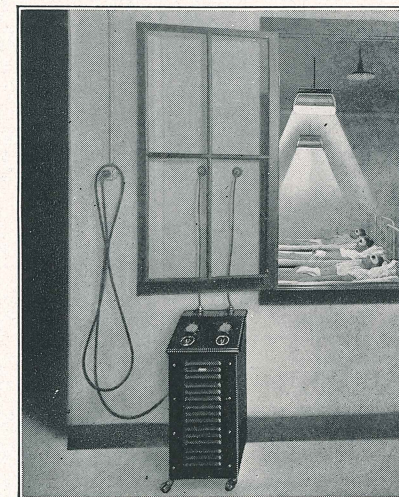
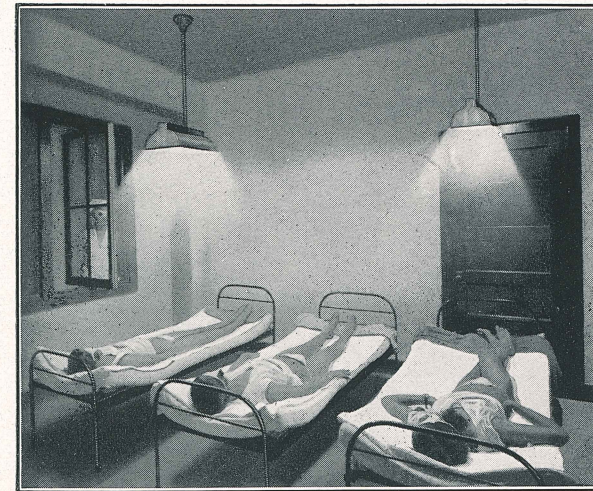
The Burdick Quartz Mercury Arc Solarium

THE Burdick Quartz Solarium is an arrangement of Ultra-violet Lamps for group irradiation. Such an installation involves considerable saving in time, money, space and the number of attendants necessary. First, with a system of group irradiation it is not necessary for the patients to wait upon the equipment—a large number can receive their irradiation in a very short time. Second, two to three cots can be evenly irradiated by the rays from one lamp—all the rays are utilized. Third, several lamps are operated from one control cabinet, thus eliminating a considerable equipment cost. Fourth, a Solarium installation is very compact. With most types of Solaria a considerable saving in floor space is effected. Fifth, one attendant can easily take care of the treatment of several patients at the same time.

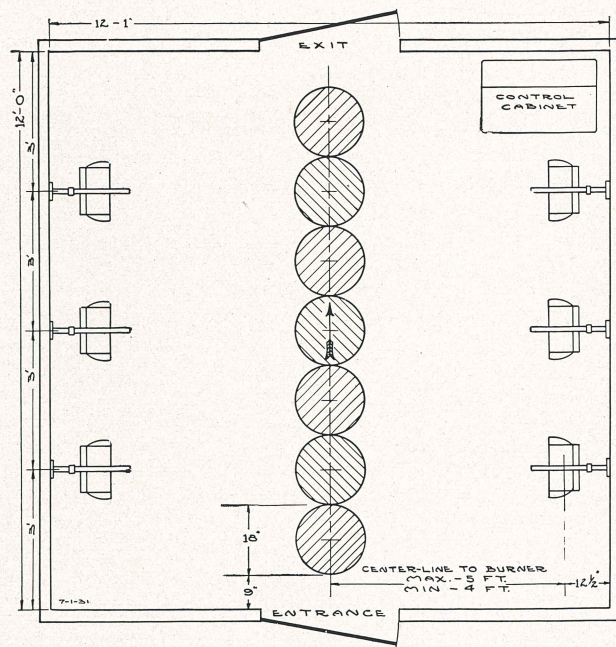
Burdick Solarium Lamps were designed exclusively for use in Solaria. Every detail has been scientifically worked out. The rays spread evenly to the correct width, the Solarium is operated from one control cabinet, each lamp having a separate switch, voltmeter and voltage regulator. Each lamp is provided with an automatic heat starter.

A super-Solarium consists of one, two, four, six or eight Ultra-violet Lamps with two, four, eight, twelve or sixteen large Z-30 Zoalites, and as many large fans as there are Ultra-violet Lamps. This type of Solarium gives both the Ultra-violet and Infra-red of the high mountain sun, and the fans supply the warm breeze of the sea shore.

A Standard Solarium consists of one, two, four, six or eight Ultra-violet Lamps suspended from the ceiling.



In the Burdick open type Solarium at the Koch Hospital in St. Louis one attendant cares for the irradiation of several patients in a minimum time with minimum expense for current, and for equipment, in minimum space.



STATIONARY SIX-LAMP SOLARIUM.

Seven individuals standing in an upright position are irradiated at one time, both front and back. Exposures require approximately 2 minutes after which another group of 7 take their places on the circles indicated.

There are several types of Solaria. The first "the Open Type" as used at the Medical Center in New York, at the Neponsit Beach Hospital for Tubercular Children (Bellevue Hospital Unit) and at

the Koch Hospital in St. Louis, is designed to serve in all places where privacy need not be the primary consideration. The Lamps are suspended from the ceiling of an open room, and placed so

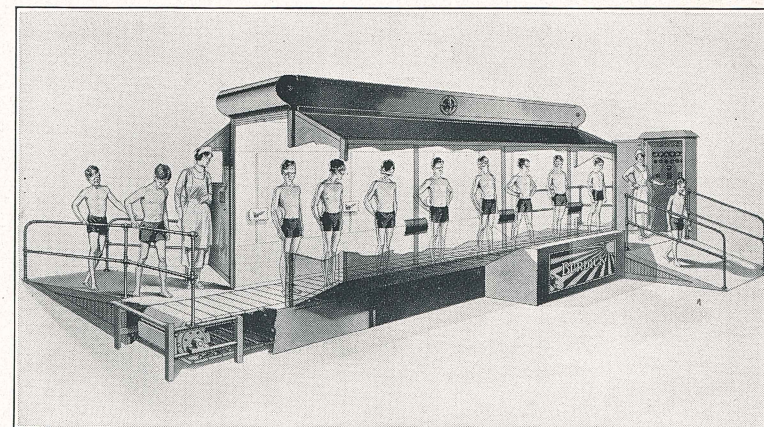


Diagram of the Automatic Conveyor Solarium showing arrangement of the lamps, control cabinet (at the extreme right), and moving platform which carries patients easily through the Ultra-violet chamber at a speed which can be regulated in minutes or seconds.

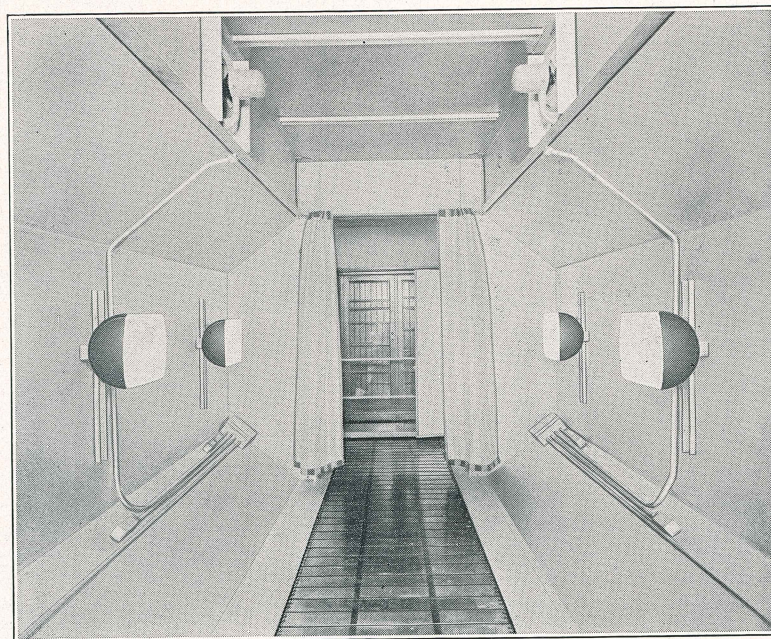
as to make the most of its proportions. The cots are usually grouped in pairs under each lamp, the whole arrangement being planned to secure even distribution of the rays over all cots.

Of course, one attendant can keep all patients under observation at the same time.

A variation of the Open Solarium is the Booth Type where each lamp is placed in a separate booth and irradiates but one cot. This insures

complete privacy and at the same time retains the advantage of one attendant controlling several lamps from one control unit.

The Automatic Solarium provides for carefully regulated treatment of a large number of persons in a very short time. It consists of a steel cabinet 12 feet long by $8\frac{1}{3}$ feet wide through which a moving platform carries the patients (at a speed which can be regulated in minutes



Interior view of the Burdick Automatic Conveyor Sun-Room. Picture by courtesy of the Spalding School for Crippled Children in Chicago.

and seconds) between six large Quartz Mercury Arc Lamps. The platform is ruled so that each person knows exactly where to stand so that he will be rayed evenly front and back. Patients who are unable to walk can be wheeled onto the moving platform in wheel chairs and thus get their Ultra-violet. In this Solarium a first de-

gree erythema can be given to from 250 to 350 patients per hour at a cost of 30 cents per hour for current.

More detailed information on Solarium equipment to meet your specific requirements will be sent on request. The Burdick Engineering Department will be glad to assist you in laying out your space to the best advantage.

II

Water-cooled Quartz Lamp

Indications for the Water-cooled Lamp

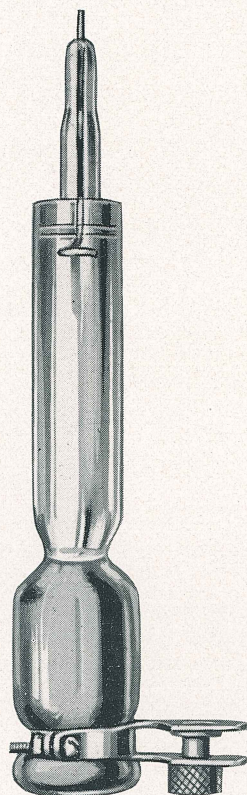
THE Ultra-violet rays shorter than 2900 Angstrom Units are powerfully germicidal. This has been proven both in the clinic and in the laboratory. See the U. S. Bureau of Standards Bulletin No. 495. The rays from the Water-cooled Ultra-violet lamp, combining as they do, the longer regenerative wavelengths and the shorter germicidal wavelengths, become a regenerative bactericide. Unlike many medicinal germicides, the radiation does not destroy the tissues but stimulates them while it kills the germs. Even when it is necessary to employ a powerful blistering dose, the tissues return quickly to normal.

Because of its convenience and cleanliness, and the brief periods of treatment necessary to positive results, the Burdick Water-cooled units are preferred by specialists in many fields. In dermatology, in gynecology, in eye, ear, nose and throat diseases, and in genito-urinary conditions excellent results are being obtained. The general practitioner, influenced by similar reasons, finds innumerable cases in his practice which react promptly and favorably to Ultra-violet light.

Among the conditions in which Water-cooled Ultra-violet has been highly effective are

Acne	Blepharitis	Sycosis
Lupus	Conjunctivitis	Pityriasis Rosea
Eczema	Corneal Ulcers	Erysipelas
Favus	Tonsillitis	Carbuncles
Furunculosis	Seborrhea	Alopecia
Herpes Zoster	Septic Conditions	Chilblains
Psoriasis	Rhinitis	Coryza
Ulcers	Hay Fever	Fissure
Impetigo	Diphtheria Carriers	Fistula
Wounds	Sciatica	Cracked Nipple
Prostatitis	Infections	Osteomalacia
Epididymitis	Sinusitis	Septicemia
Otitis Media	Ozena	Ulcerations

Essential Features of the Burdick Water-cooled Quartz Lamp



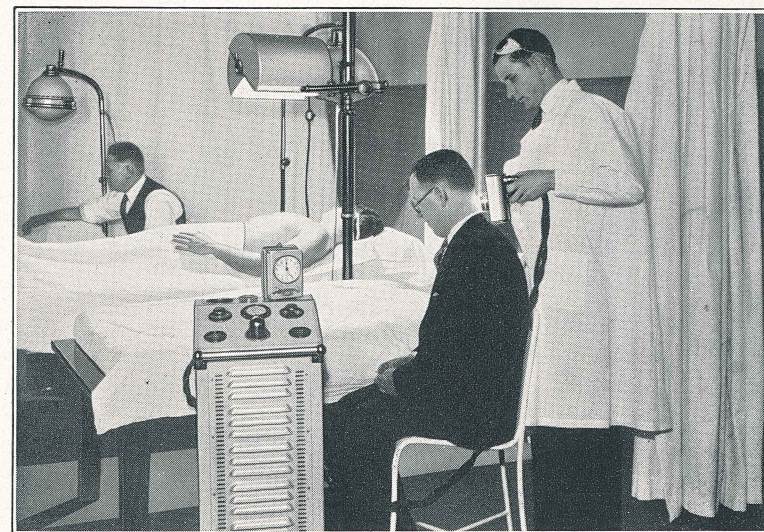
The vertical Uviarc used in Burdick Water-cooled Quartz Mercury Arc Lamps.

The Burner

The burner used in the Water-cooled Lamp is a vertical high intensity Uviarc built on a straight line. This type of construction adds greatly to the durability of the tube. (Were the tube curved the arc hitting on the curve would tend to cause devitrification and exhaustion.)

A second and very pronounced advantage, lies in the fact that the Uviarc burner can be readily disconnected from the Water-cooled casing and sent back to the factory for repairs or replacement if it is ever necessary. If the burner were an integral part of the unit, the entire casing would have to be returned should repairs be required.

The vertical Uviarc used in the Water-cooled lamp has the same highly glazed surface which is found in the Air-cooled type, and which so greatly decreases the ratio of depreciation. It also has the same ease of starting, high rating and simplicity of design.



In the center foreground you will notice the Burdick Ever-Clear Water-cooled Lamp (all lamps are Burdick). This is the Physical Therapy Department of the Jersey City Hospital, Newark, N. J.

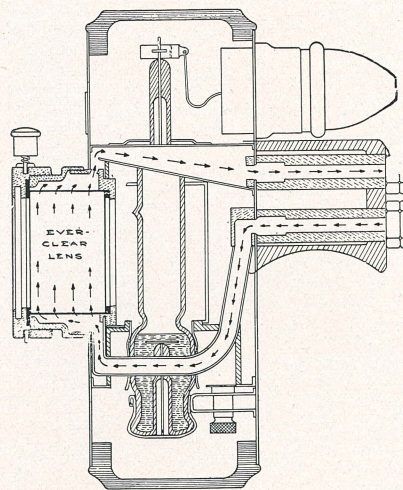
Controls

With Water-cooled Lamps where treatments are usually measured in seconds, the voltmeter and voltage regulator are absolutely essential. No Burdick Water-cooled Lamp is built without them. The amperage is carefully adjusted for each burner before the lamp leaves the factory, so that at the same voltage every Burdick Lamp has a standard

output. These three things, voltmeter and voltage regulator, and amperage adjustment are basic fundamentals which combined with the Ever-Clear Window insure precise technic and results.

The Ever-Clear Window

For many years users of Water-cooled Quartz Lamps were confronted with the problem of an ever changing technic, due to an ever dimin-

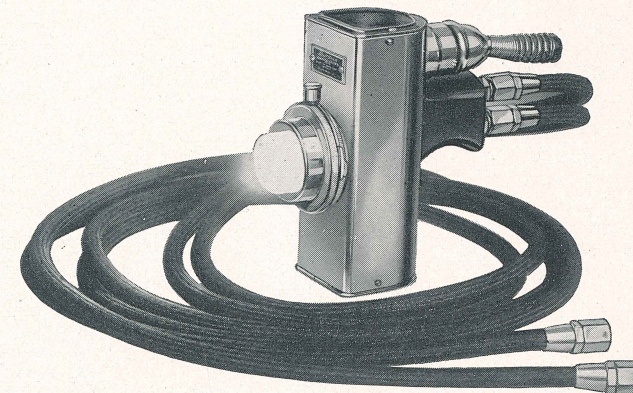


Notice that the cooling water stream flows around the Ever-Clear Window instead of across its face so that no impurities from the water can ever dim or discolor it. The Infra-red rays are filtered out by a quartz lens (Ever-Clear Lens) filled with triple distilled water so that treatments with this lamp are always cool and comfortable.

ishing efficiency of the quartz window of their lamp. This decrease in efficiency was caused by the deposit on the faces of the window of minute impurities from the water stream which cooled the burner and window. In the old fashioned lamp the water flowed directly across the faces of the window. Finally, Burdick devised a means of cooling the lamp in which the water flowed around the window instead of across its face. This immediately eliminated all loss in efficiency of

the window. The Ever-Clear window received great acclaim, being generally acknowledged the greatest development in Water-cooled Lamps since their inception.

Not long after the development of the Ever-Clear window, Burdick began work on a filter which would eliminate the Infra-red rays, thus making possible very intense contact treatments with no discomfort due to heat. It was found that the best filter (one which would absorb Infra-red without absorbing Ultra- vio-



This is the Burdick Ever-Clear Water-cooled Casing containing the intense vertical Uviarc burner. The window of this lamp cannot be contaminated by the water cooling stream with its impurities and thus always transmits the full high intensity radiation produced by the burner.

let) was a quartz lens filled with triple distilled water and vacuum sealed.

This latest development resulted in the present Burdick lamps having an operating surface that is always cool and comfortable. The water lens is an exclusive Burdick feature.

With a Burdick Lamp you work with a cooler ray of known and greater intensity.

The D-Shaped Casing

The Burdick casing is the first tubular type of Water-

cooled Lamp casing ever developed.

The water circulation in the casing is so arranged that uniform cooling is obtained with absolute protection to all the delicate parts of the lamp, thus avoiding the possibility of breakage.

The shape of the casing was carefully studied, and at first a few cylindrical casings were made. The "D" shape casing was finally adopted, first of all to shorten the distance between the Uviarc generator and outer window

to an absolute minimum. The value of this becomes obvious when one remembers that the intensity of radiation is approximately in inverse proportion to the square of this distance.

The entire casing is made of light pressed metal parts constructed by precision dies, thus avoiding the weight necessary in using casting construction. The value of a light casing is outstanding as it means treatment comfort and added precision to the administrator.

Self-Contained Mobile Water-Cooled Units

Receptor Model

As is implied by its name, the two features which really distinguish this instrument are its easy mobility and the fact that it carries its own water supply, independent of any faucet connection, or outside source of supply. These advantages, together with the fact that it may be operated constantly without overheating, make it an ideal model

Still another feature which lifts the Burdick casing into a class by itself is the patented locking device for the Adaptor (which receives the various quartz applicators used in orificial work). To remove the adaptor from the Burdick casing, one simply presses a button.

All Burdick Water-cooled Lamps are made so that an Air-cooled lamp can be easily added, converting the equipment into an economical combination outfit.

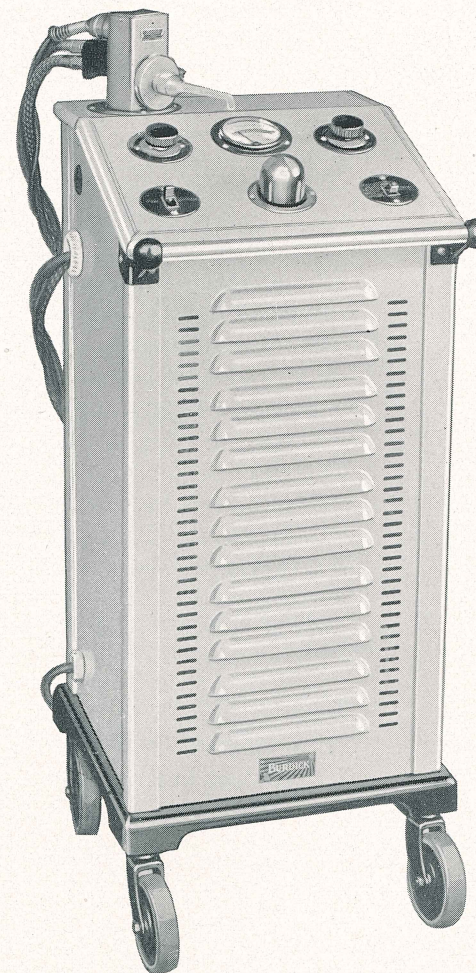
for use in the hospital or by the specialist in physiotherapy.

A summary of the distinctive features of this equipment follows:

Continuous Operation

Constant use, without overheating, is assured by an improved forced-air radiator type cooling system, made practical by a new design pump unit using a constant

Self-Contained Mobile Unit Receptor Model



This lamp is automatically self cooling—no outside source of water supply is necessary. It can therefore be moved about at will. It is equipped with the famous Uviarc burner, D-shaped casing, Ever-Clear quartz window, control board receptor for casing, voltmeter and voltage regulator, and high intensity switch (75-volt). Finished in duotone grey lacquer.

*LW-505 for A.C.
LW-205 for D.C.*

speed alternating or direct current motor of a larger size. This provides a constant flow of water at high pressure regardless of fluctuation in line voltage during the building-up period of the lamp.

All water connections between the pump and radiators are made with brass couplings eliminating objectionable hose connections.

Control

By the Special Burdick system of selective switches, it is possible to operate either the Water-cooled or Air-cooled Lamp at the respective voltages of 55 and 75. This eliminates the possibility of starting more than one lamp at a time when using a Combination unit.

The Water-cooled Lamp and Water-pump motor are energized simultaneously when the selective switch is set on the Water-cooled position. This protects the Water-cooled Lamp from being operated without the

water flowing, provided there is water in the radiator. The presence of water is indicated by the water-flow indicator, while the fact that the Water-cooled Lamp is energized is made known by the pilot lamp.

The voltage of either the Water-cooled or Air-cooled Lamps is regulated by the voltage regulator, and the voltage of the Uviarc is accurately measured by a voltmeter. In addition to these controls, there is a main off-and-on switch, and an intensity switch which provides a normal and a high voltage.

High Voltage

Many physicians feel that there are certain pathological conditions that must be treated by a more intense application of Ultra-violet radiation than has been available heretofore. Voltage on this lamp may be increased from 55 to 75 volts almost instantly by simply throwing the intensity switch to high.

Accessibility of Parts

The new unit is provided with a removable door located in the rear of cabinet. With a slanting top construction it is obvious that switches, meter, and other members located directly under the top are easily accessible. This is also true of all other working parts requiring lubrication. Care has also been taken to provide a simple means for draining and filling the water system.

Extreme Mobility

This Self-Contained Unit is provided with a hand rail and is mounted on four ball-bearing casters with 4" solid rubber-tired wheels so that the lamp may be moved from

bed to bed, or about the office very easily.

Improved Receptor

The Receptor for holding the Water-cooled Casing, places the casing within easy reach of the operator, and in position where it is impossible to accidentally strike the casing when moving the unit through a doorway or other close quarters. This Receptor is lined with special, heavy rubber to prevent any marring of the finish on the casing.

These lamps are so designed that an Air-cooled casing may be added at any time. Thus at minimum expense a splendid combination outfit can be obtained.

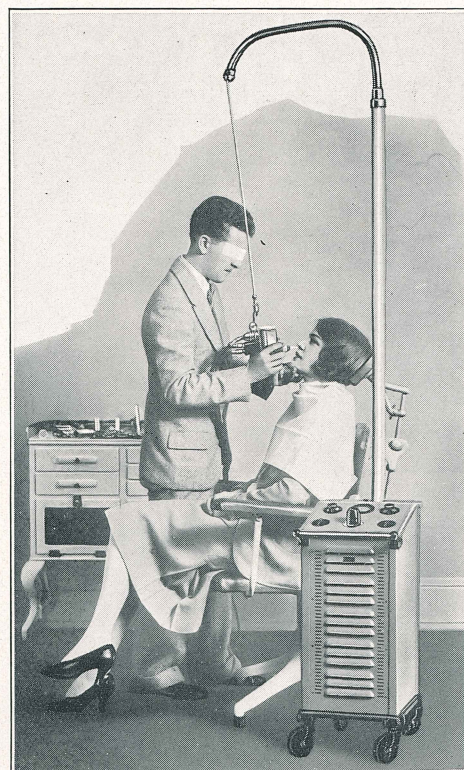
The Suspension Casing Models

The Burdick Water-cooled Lamp Casing is the lightest on the market. It is as light as it can be made compatible with durability, yet even so insignificant a weight will grow irksome if one has to support it hour after hour.

Burdick designed a lamp having a graceful upright from which the casing is suspended with the weight neutralized by a counter-balance for those specialists who spend many hours a day working with the Water-

The Self-Contained Mobile Unit Suspension Casing Model. A counter-balanced upright removes the slightest strain from the hand of the operator.

LW-210 for D.C.
LW-510 for A.C.



cooled Lamp and who must maintain a delicate precision of technic—the Eye, Ear, Nose and Throat Man, the Urologist, Gynecologist, the Dermatologist and the Den-

tist. It is also peculiarly adapted to the nurse or physiotherapist whose time is wholly devoted to giving treatments. Slight effort is required to direct the rays.

The Burdick Faucet Type Water-Cooled Units

The Faucet Type Units derive their cooling water from any ordinary water faucet. (The Ever-Clear Window in these units makes it possible to use very impure water with no discoloration, because the water does not touch the face of the window). These units are compact and very economical. They have the voltmeter and voltage regulator, high intensity switch, D-shaped casing—in fact, all the refinements of the Self-Contained models, except the self-contained cooling (water pumping) system which makes for greater mobility.

The cabinet is hexagonal in shape, with cane panels (of steel) finished in duo-tone grey lacquer with nickel trimming. This lamp is so designed that it may be used either as a Water-cooled Lamp alone, or an Air-cooled Lamp may be added convert-

ing the outfit into a Combination Unit.

The Receptor Model

In this model the casing rests in a receptor pocket on the control board. This receptor is lined with special heavy rubber to prevent scarring of the casing.

This is the most economical model of all Burdick Water-cooled Lamps. While it does not carry any unnecessary fixtures, nothing that is essential in any degree has been omitted. It is designed particularly for short applications of intense Ultra-violet and for such a purpose is ideal.

The Suspension Casing Model

A counter-balanced upright takes the entire weight of the casing from the operator's wrist and forearm, leaving him free to direct the applicator to the tissue which he wishes to radiate.

Quartz Lamp Applicators



See Special Applicator Catalog No. 35A for full set of Applicator Electrodes

On the opposite page is illustrated a standard set of Applicators for use with the the Water-cooled Lamp in giving official and localized treatments. The set is recommended for general all-round use and we have found that one Applicator can serve a number of purposes.

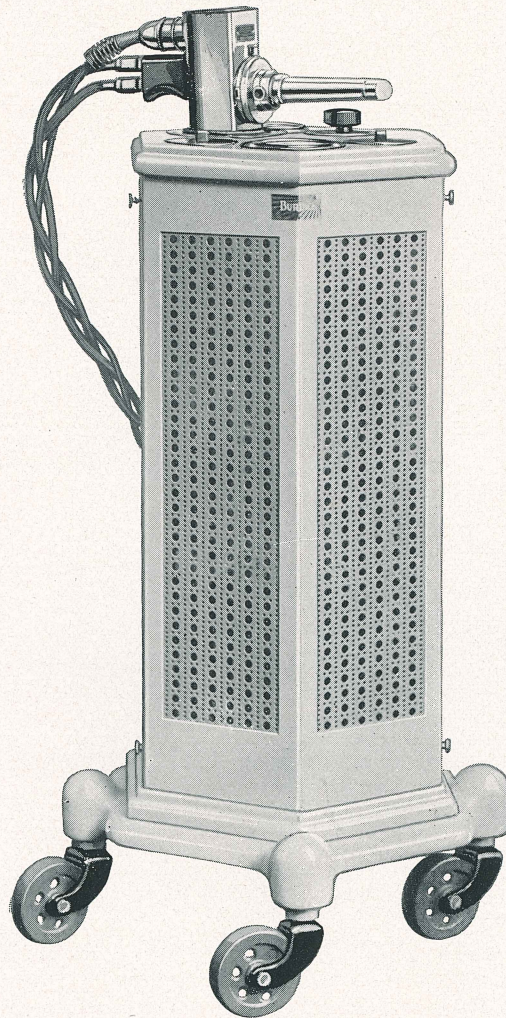
We urge all users of Water-cooled Lamps to make sure that they are equipped with proper applicators for doing the work effectively. Consult your Burdick dealer for further information on Quartz Lamp Applicators or write to us at Milton and our Medical Department will be glad to give you the benefit of their experience.

All Burdick Applicators are made of the finest materials obtainable and for those made of Quartz only the finest crystal fused quartz obtainable is used.

Reading from left to right the applicators shown in the special case on the opposite page are as follows:

- AW-107. Prismatic Quartz rod Applicator— $\frac{5}{8}$ " diameter, $4\frac{1}{2}$ " long, with 45° angle prism tip and removable metal shield. Especially adapted for throat and mouth work. Fits Holder AW-873 and AW-874B. Price—\$40.00
- AW-67. Pharyngeal Applicator— $4\frac{7}{8}$ " long, with hollow metal tube with a round lens tip $\frac{5}{8}$ " in diameter, convenient for throat, vaginal or localized skin application. Fits Holder AW-874. Price—\$16.00
- AW-764. Prostatic Applicator— $\frac{7}{8}$ " diameter, $5\frac{3}{4}$ " long, with solid metal plunger for insertion and a cut away tip to fit prostatic area. Fits Holder AW-874. Price—\$8.00
- AW-877. Wood's Glass Diagnostic Applicator built to attach directly to quartz window. Especially useful in diagnosing skin eruptions before eruptions appear on the surface. Also for showing up dead teeth and many other diagnostic uses. Price—\$11.25
- AW-81. Quartz Rod Applicator—4" long, $\frac{5}{16}$ " diameter and with 45° bend at the tip. Specially adapted for treatment of localized areas in mouth, throat, nose or other cavities or surfaces. Fits holder AW-858. Price—\$16.00
- AW-58. Straight Quartz Rod Applicator— $2\frac{3}{4}$ " long, $\frac{1}{4}$ " diameter. Adaptable for treatment of localized conditions in mouth, nose, ear, or other cavities or surfaces which can be reached with straight Applicator. Fits Holder AW-857. Price—\$12.00
- AW-62. Quartz Nasal Applicator, shaped to fit the nasal passage. $\frac{1}{8}$ " thick, $\frac{5}{16}$ " wide, $5\frac{1}{4}$ " long. Fits Holder AW-857. Price—\$24.00
- AW-874-B. Holder for Applicators having $1\frac{1}{8}$ " round shanks, with removable metal bushing to reduce diameter so as to accommodate Applicators having $\frac{13}{16}$ " round shank. Price—\$3.00
- AW-857. Adjustable Holder for Quartz Rod Applicators having diameter from $\frac{3}{16}$ " to $\frac{5}{16}$ ". Price—\$7.50
- AW-858. Adjustable Holder for Quartz Rod Applicators having diameter from $\frac{1}{4}$ " to $\frac{3}{8}$ ". Price—\$8.50
- Special plush lined, leatherette case for above set of Applicators. Price—\$4.50

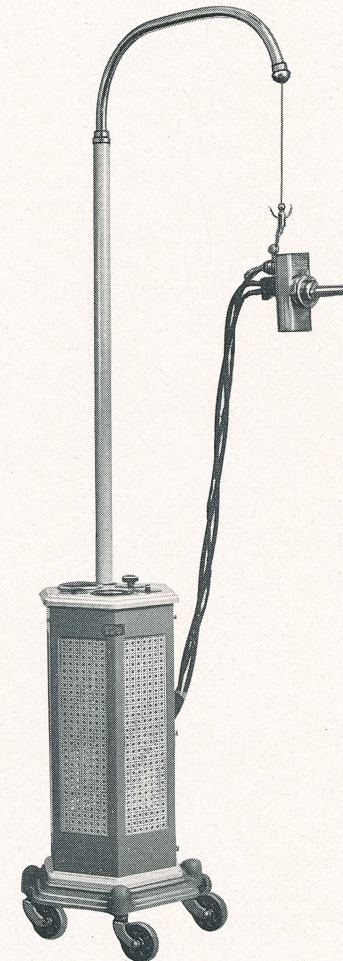
Receptor Model Faucet Type Lamp



In this lamp the water which cools the casing is drawn from any cold water faucet. Uviarc mercury quartz burner in light D-shaped casing. Voltmeter and voltage regulator for accurate control of dosage. The Ever - Clear Window insures undiminished transmission of the Ultra-violet rays.

*LW-530 for A.C.
LW-230 for D.C.*

The Suspension Casing Model Faucet Type Unit



To maintain the delicate precision of technic required in orificial work through a prolonged series of treatments, it is wise to relieve the operator's wrist and hand of the slightest strain. In this model the casing is suspended from a counter-balanced upright. Has the high intensity Uviarc burner, Ever-Clear window, voltmeter and voltage regulator, high intensity switch, and water lens.

*LW-231 for D.C.
LW-531 for A.C.*

Combination Air- and Water-cooled Lamps

THOUGH Air- and Water-cooled Ultra-violet Lamps serve separate fields, both Air-cooled and Water-cooled Ultra-violet are essential in the treatment of many conditions. Tonic irradiations are essential for their systemic effect—particularly upon mineral metabolism. Bactericidal irradiations are needed for the treatment of local conditions. Though the burners used in the Air-cooled and Water-cooled Lamps have the same spectrum, the difference in the operating temperatures of the burner makes a difference in the amount of long and short wave Ultra-violet delivered to the treatment area. In the Air-cooled Lamp (operated at a relatively high temperature) a cloud of mercury vapor screens out much of the short wave length rays. In the Water-cooled Lamp this mercury screen is condensed by the cold water.

Also, a major part of the radiation from the Air-cooled Lamp is reflected and most of the radiation of the Water-cooled Lamp is direct from the burner. The fact that long wave length Ultra-violet is more readily reflected than short wave length is another reason why there is such a difference in the effect of the two lamps.

It is also obviously impossible to use an Air-cooled Lamp for irradiation of the cavities of the body, owing to the size of the lamp, and to the quantity of heat generated. A Water-cooled Lamp is quite as inefficient for general irradiation as an Air-cooled Lamp is for local. The physician needs both sources of irradiation in order to serve his practice efficiently. For the doctor interested in an Air- and Water-cooled Unit, in the most compact and economical form, the

Burdick Combination Units were designed. In these units, both lamps operate from one control instead of from two separate controls, so that the cost of one is eliminated.

Self-Contained Combination Model

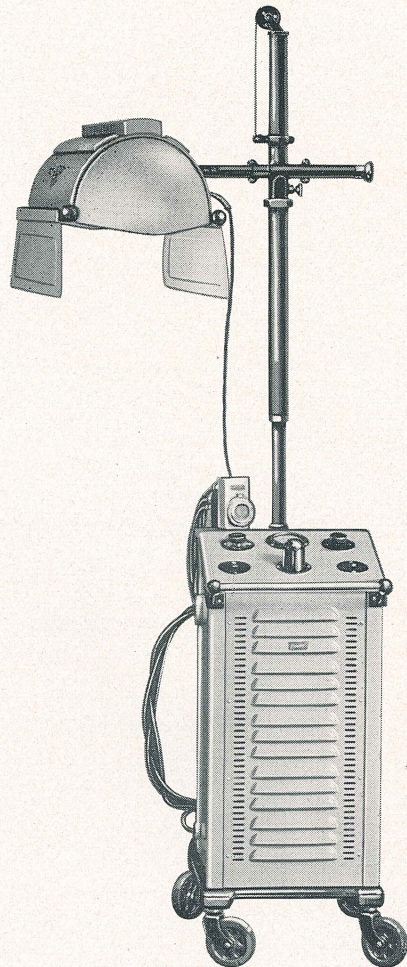
The Self-Contained Combination Model consists of our Super-Standard Air-cooled Lamp and our Self-Contained Mobile Water-cooled Lamp mounted together on four large rubber-tired ball-bearing rollers and operating from one control. The Air-cooled Lamp has all the exclusive Burdick features listed under the new Super-Standard Air-cooled Lamp including the new high intensity reflector, which is of chromium and will not tarnish, shelf support which takes strain off the burner and helps to provide shadowless reflection, full width ventilators, non-tipping ball-bearing stand with horizontal extension of 15" and vertical

extension from 45" to 75"; and the Water-cooled has the famous D-shaped casing with Ever-Clear Window and water lens. Both burners are Uviarcs. In the Water-cooled Lamp, the cooling system is entirely self-contained and independent of any outside source of supply. This results in complete mobility. An improved forced-air radiator-type cooling system provides a constant flow of cold water which is automatically pumped through the casing. This lamp can be operated either on high or on low intensity. Provided with voltmeter and voltage regulator.

Faucet Type Combination Model

This unit consists of our new Super-Standard Air-cooled Lamp and our Faucet Type Water-cooled Lamp. The Air-cooled Lamp has the new reflector which concentrates the radiation. The Water-cooled Lamp is cooled by ordinary tap water.

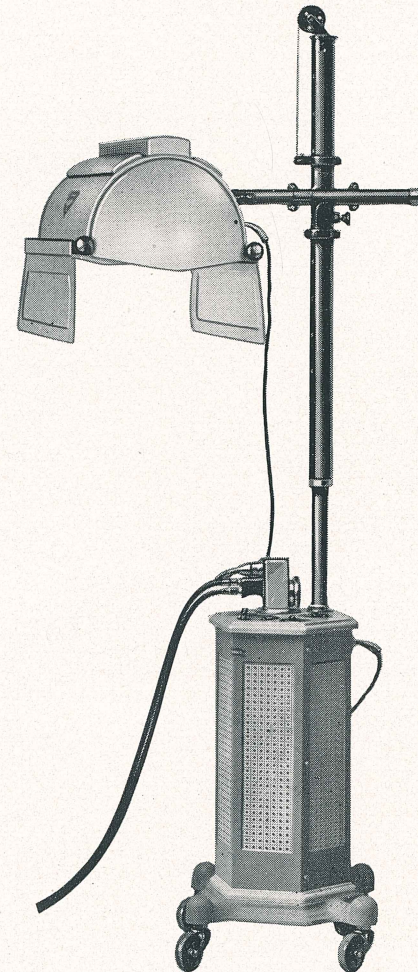
Self-Contained Combination Model Quartz Mercury Arc Lamp



This lamp has the new Super-Standard casing which delivers maximum intensity over the treatment area (22 inches by 7 feet at 3 foot skin distance); and the self-contained water system with pump and cooling fan which makes absolute mobility possible. Has voltmeter, voltage regulator, high intensity switch and Uviarc burner.

LAW-640 for A.C.
LAW-340 for D.C.

Faucet Type Combination Model Quartz Mercury Arc Lamps



The Combination Lamps are economical both in space occupied and in cost. The price of one control is eliminated because both lamps operate from a single control cabinet. The model illustrated has the new Super-Standard Air-cooled casing and the Faucet type Water-cooled casing with Ever-Clear Window, voltmeter, voltage regulator, high intensity switch and all special features found in both the Super-Standard and the Faucet Type Models.

LAW-660 for A.C.
LAW-360 for D.C.

III

Zoalite Infra-red Lamps Indications for the Zoalite

FROM the therapeutic standpoint, the Infra-red rays are heat rays, though they actually possess no heat in themselves. Their value lies in the fact that they produce heat in tissues which absorb them—thus affording the physician the cleanest, most convenient heat for the relief of human suffering.

Heat is one of the oldest forces in therapeutics. Its value has been axiomatic in medical practice. With the application of heat the chemical processes in the body are hurried to completion. The natural defensive powers of the tissues are vigorously strengthened—and repair and recovery are stimulated by natural and healthful methods.

With the Zoalite—producing penetrating heat in the tissues themselves—Infra-red Therapy has been placed upon a strictly scientific basis. The venerable methods of the past with their uncertainties and discomforts are rapidly being discarded.

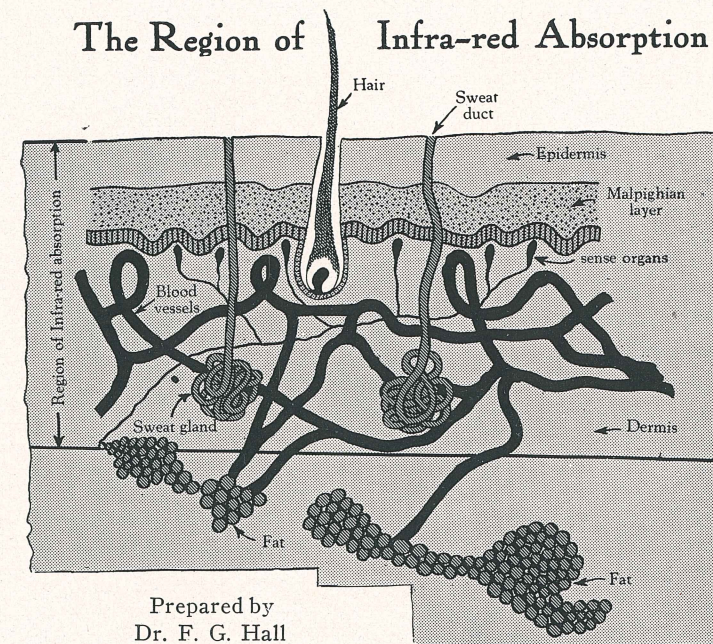
Now we have a clean and convenient method of applying a constant degree of heat to the area treated. The temperature can be maintained at a constant height throughout the desired period of treatment. The patient need not be moved or disturbed in any way.

The Zoalite is indicated where it is desirable to increase the blood supply in a part; or by derivative action to relieve congestion or inflammation, relax spasm, to relieve pain, contractures and various nervous disorders.

It is used very successfully in

Pneumonia	Asthma	Neuralgia
Pleurisy	Infections	Lumbago
Persistent Cough	Colics	Myalgia
Contusions	Bronchitis	Menstrual Disorders
Wounds	After operations	Strains
Insomnia	Arthritis	Sprains

The Region of Infra-red Absorption



The capillaries within three millimeters of the skin surface can contain half of the blood in the body. Dr. Hall of Duke University, North Carolina, has shown by most accurate measurement that the capacity of the capillaries is increased twenty per cent under treatment by the Zoalite. Thus over sixty percent of the blood stream flows

through the region directly and powerfully affected by the Infra-red from the Zoalite.

The chart reveals that these rays pass well beyond the nerve endings which give the sensation of heat, thus producing a profound sedative effect. By reflex action a dilatation of the capillaries is caused, creating a marked

hyperemia in the area treated. Infra-red energy, penetrating easily and instantly to the blood in these capillaries is converted into heat as it is

absorbed—and the temperature of this large volume of blood is carried back into the deeper tissues and imparts its heat through the vessel walls.

The Zoalite Infra-red Series

The Element

THE intensity of the radiations produced by a generator is the true measure of therapeutic value. The non-metallic surface of the single-bar element is a scientific combination which closely approximates the ideal black body required by the physicists. It delivers the maximum intensity of the therapeutic Infra-red wave lengths in proportion to the current required for its operation.

Tests made by the Research Department of The Burdick Corporation proved that with the small Zoalite the energy developed as Infra-red radiations, ten inches from the edge of the reflector, was over 54 percent of the power input. Other elements examined among them lava, wire coils, incandescent lamps,

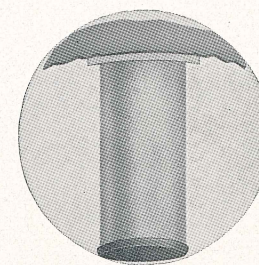
etc., could deliver an output of Infra-red radiations which measured only 6 to 18 percent of the power input.

Distribution

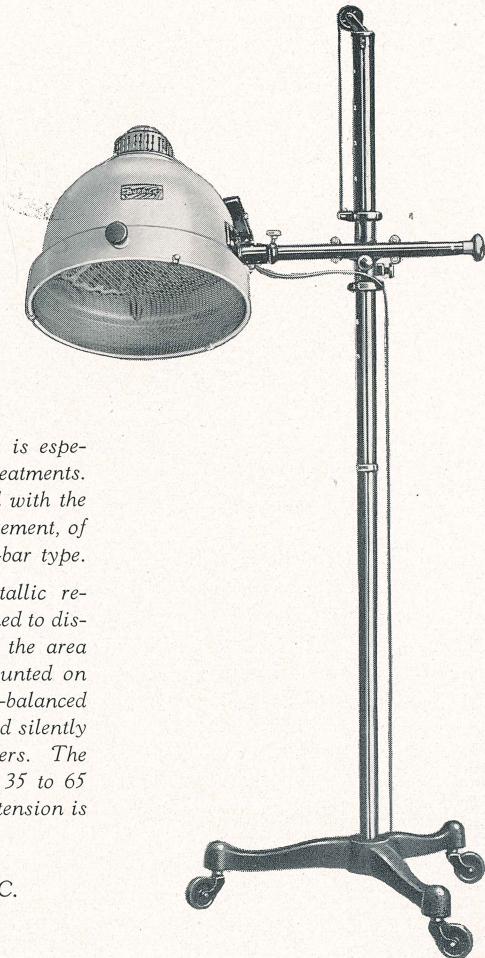
Intensive treatments are productive of the most remarkable results. In order to utilize to the full, the intensity of your generator it is essential that the rays be distributed evenly over the area treated. Otherwise the "hot spots" will reach the patient's limit of tolerance while other areas receive low intensity.

The new Burdick single-bar element is closely centered about the axis of the reflector and uses a highly polished, parabolic reflector of ideal design. This means high intensity without the danger of "hot spots."

The Z-30 Zoalite



The famous Single-Bar Element.



The Burdick masterpiece is especially adapted to systemic treatments. This lamp is now equipped with the higher intensity 1250-watt element, of the Burdick patented single-bar type.

The highly polished metallic reflector is scientifically designed to distribute the rays evenly over the area treated. The casing is mounted on the famous Burdick counter-balanced stand which moves easily and silently upon three rubber-tired casters. The vertical adjustment is from 35 to 65 inches and the horizontal extension is 15 inches.

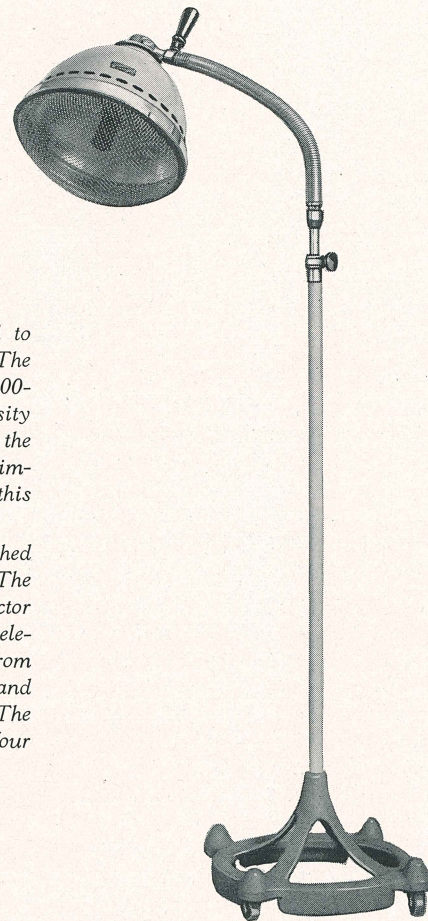
Z-30 for A. C. or D. C.

The Z-12 Zoalite

This effective unit is adapted to local or general irradiation. The patented single-bar element (600-watt) delivers the maximum intensity of Infra-red rays in proportion to the amount of current used. Recent improvements in the generator make this model more effective than ever.

The double-wall reflector of polished aluminum is carefully ventilated. The sturdy flexible arm holds the reflector firmly at any angle desired. The telescope upright permits extension from 40 to 72 inches from the floor and locks at the desired height. The heavy base is mounted upon four rubber tired, ball bearing casters.

Z-12 for A. C. or D. C.



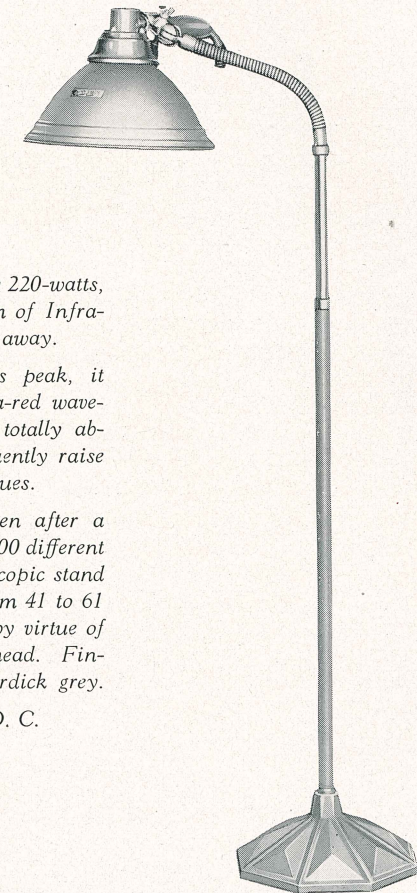
The Z-70 Portable Zoalite

Its generator draws only 220-watts, yet emits a mighty stream of Infra-red that can be felt 10 feet away.

When operating at its peak, it produces only those Infra-red wavelengths which are almost totally absorbed and which consequently raise the temperature in the tissues.

The reflector was chosen after a comparison of more than 100 different reflector curves. The telescopic stand is adjustable vertically from 41 to 61 inches and to any angle by virtue of a goose-neck and swivel head. Finished in characteristic Burdick grey.

Z-70 for A. C. or D. C.

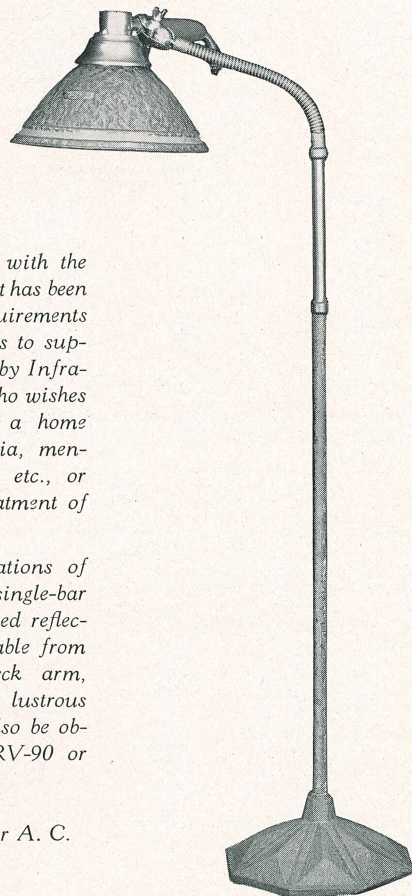


The RV-85 Prescription Zoalite

This Model is identical with the Z-70 except for the finish. It has been designed to meet the requirements of the physician who desires to supplement his office treatments by Infra-red treatments at home, or who wishes to prescribe a Zoalite as a home source of heat for insomnia, menstrual discomfort, sprains, etc., or wishes to use it in his treatment of bedridden patients.

The mechanical specifications of this Zoalite are, 220-watt single-bar element, scientifically designed reflector, telescopic stand adjustable from 41 to 61 inches, gooseneck arm, swivel head. Finished in lustrous peacock blue satin. Can also be obtained in a table model RV-90 or hand model, RV-80.

*RV-85, RV-90, RV-80 for A. C.
or D. C.*



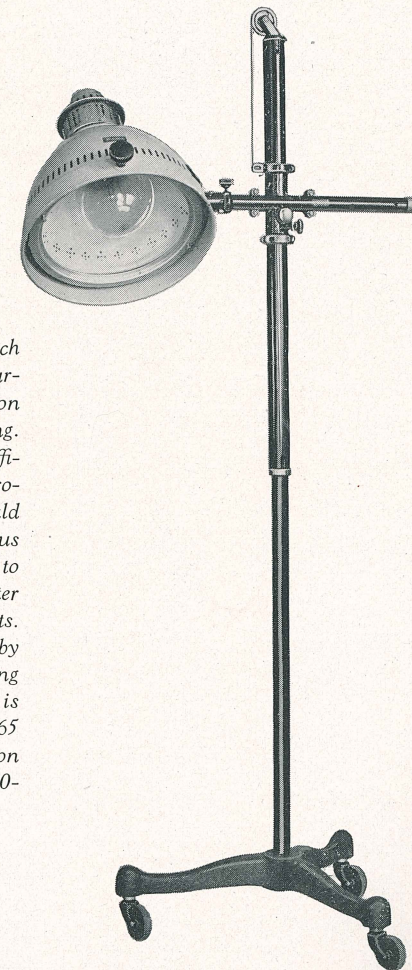
IV

The Burdick Deep Therapy Lamp

Burdick gave the first Deep Therapy Lamp to the Medical Profession. The instant success of this modality made the name Deep Therapy generally accepted for treatment with the balanced light of the visible spectrum.

There are four special factors which contribute to the success of the Burdick lamp. 1. Scientific ventilation keeps the lamp from overheating. 2. The "Translite" shield is sufficiently heavy to give perfect protection to the patient if a bulb should crack. 3. Elimination of superfluous heat brings the lamp much closer to the patient and thus affords better penetration and more positive results. 4. Ease of operation is perfected by the distinctive mounting of the casing on the special Burdick stand which is adjustable vertically, from 35 to 65 inches and has a horizontal extension of 15 inches. Provided with 1000-watt "Daylight" bulb.

DT-1005 for A.C. or D.C.



V

Electric Light Bath Cabinets

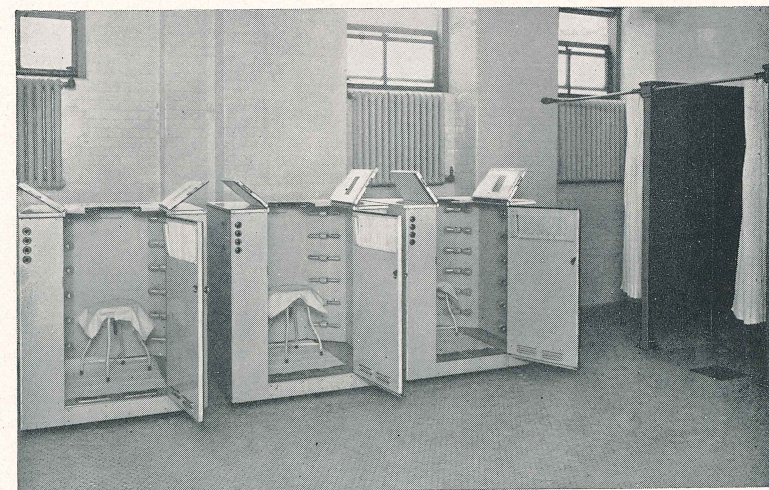
Indications for the Light Bath

THE Light Bath has two major functions. First, to stimulate the vital organs of the body by speeding up circulation, drawing excess blood away from them to the skin. Second, to cause the excretion and oxidation of the waste materials which so frequently clog the system. There are four reactions which can be produced by varying the technic of bathing in the Light Bath. These are elimination, stimulation, derivation, and sedation. Persons using the Light Bath find that they sleep better, eat better, have clear minds, and can work harder without fatigue.

The Light Bath is used both in the treatment of disease and in the maintenance of good health. Otto Juettnner, M.D., M.E., Ph.D., recommends the use of the Light Bath in the following conditions:

Neurasthenia	Nephritis
Hysteria	Diabetes
Nervous Disorders	Stimulates circulation
Obesity	Anemia
Asthma, sedative	Convalescent conditions
Sciatica	Headache
Neuralgia	Skin Diseases
Lumbago	

Burdick Light Baths are used in the country's leading



Burdick Light Baths at the Columbia Presbyterian Medical Center in New York City. This hospital, the world's largest, was naturally very particular about having the best equipment obtainable.

hospitals. They have been endorsed and purchased by U. S. Government Hospitals. They are also used in the offices of prominent physicians, and are prescribed by them for use in the homes of their patients.

Hundreds of clubs, hotels, and Y. M. C. A.s use the Burdick Light Bath for the maintenance of health. The Burdick Light Bath is specified as standard equipment by the National Building Bureau of the Y. M. C. A.

Some of the superior points of Burdick Light Bath Cabinets are:

1. Perfected ventilation produces a more comfortable bath, and one giving better therapeutic effects with a shorter treatment period.

2. The cabinets are made of steel which eliminates warping and fire hazard.

3. All parts are formed by special dies and machine tools giving absolute uniformity throughout.

4. All parts are assembled



Eleven Burdick Professional Model Electric Light Bath Cabinets at the Penn Athletic Club used for health maintenance.

by electric welding for greatly increased strength and avoiding screws or rivets.

5. A special treatment of the metal before enameling eliminates the possibility of rust.

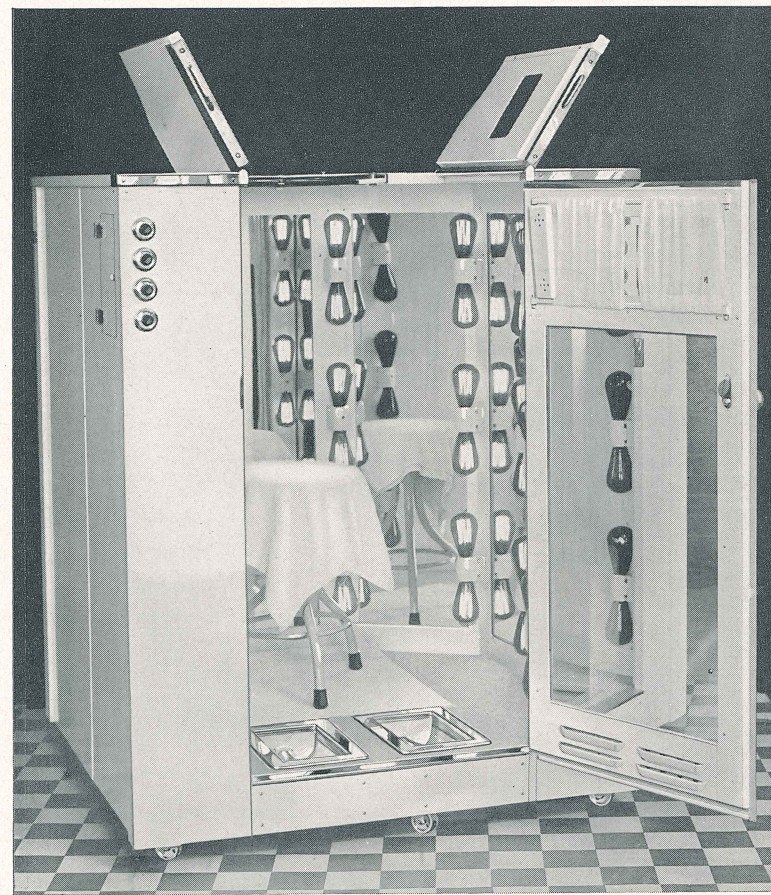
6. All hinges and trimmings where special wear

might occur are triple-plated by special processes and the nickel is highly polished.

7. A magnificent lacquered finish affords a higher degree of beauty and durability.

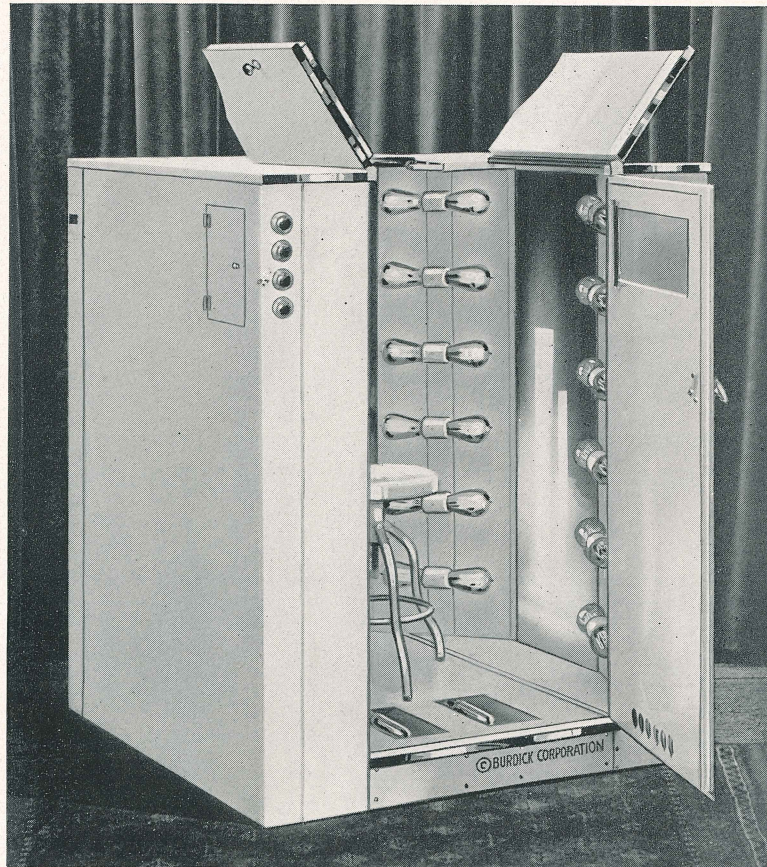
8. There are models for every need—large, small and folding.

The Professional Model



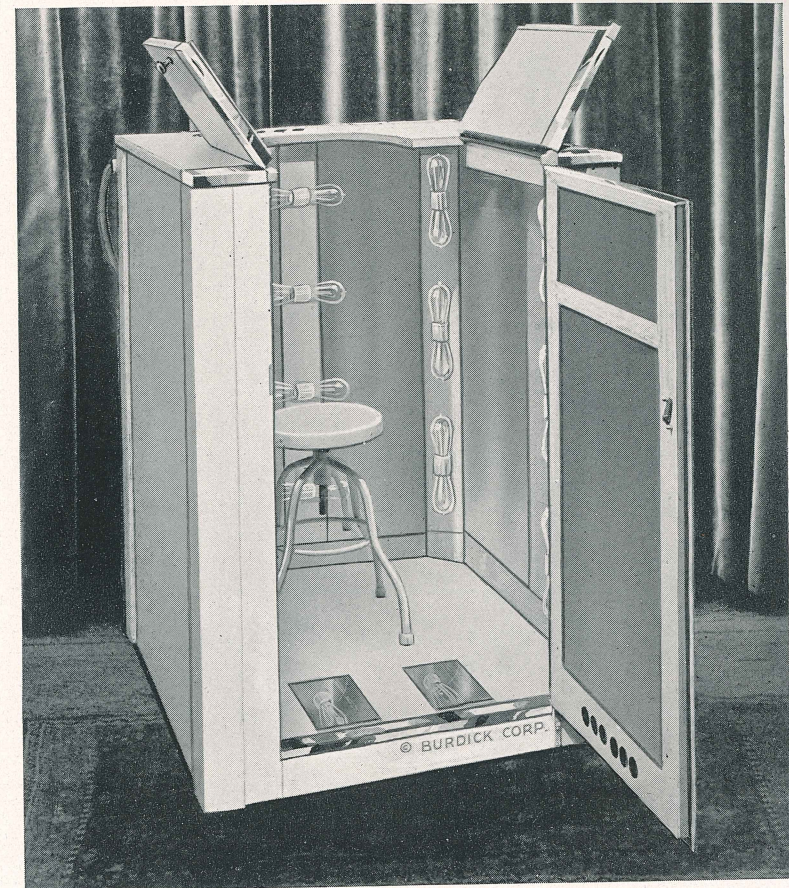
The Professional Model, the highest expression of the Light Bath principle, width 41 in., depth 42 in., height 50 in. Furnished with eight French plate glass mirrors, 48 60-watt tungsten lamps on eight circuits with eight snap switches. Constructed of steel and electrically welded so that warping or cracking is impossible. Finished in soft, white lacquer. Adjustable metal stool; hard rubber collarette; easy-access foot warmers; and improved ventilation. Shipping weight 770 lbs.

The American Special Model



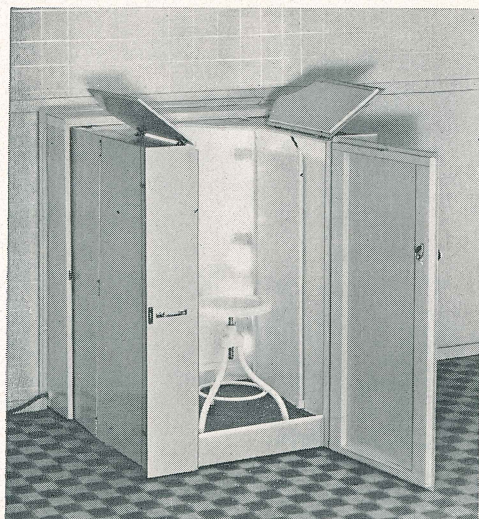
The American Model has been adopted for use in army and navy hospitals. Width 41 in., depth, 42 in., height 50 in. Furnished with eight special reflecting panels of gleaming white lacquer. Horizontal banks of 48 60-watt tungsten lamps wired on eight circuits with four snap switches. Shipping weight, 640 pounds.

The Milton Model



The Milton Model was designed for economical installation in limited space. It is very efficient. Width 32 in., depth, 36 in., height, 50 in., width of door, 22½ in. Has 32 60-watt tungsten lamps, high efficiency lacquered reflecting panels, special Burdick ventilating system, foot-warmers and adjustable metal stool. Built in two sections for easy installation. Shipping weight, 460 lbs.

The Fold-In Model

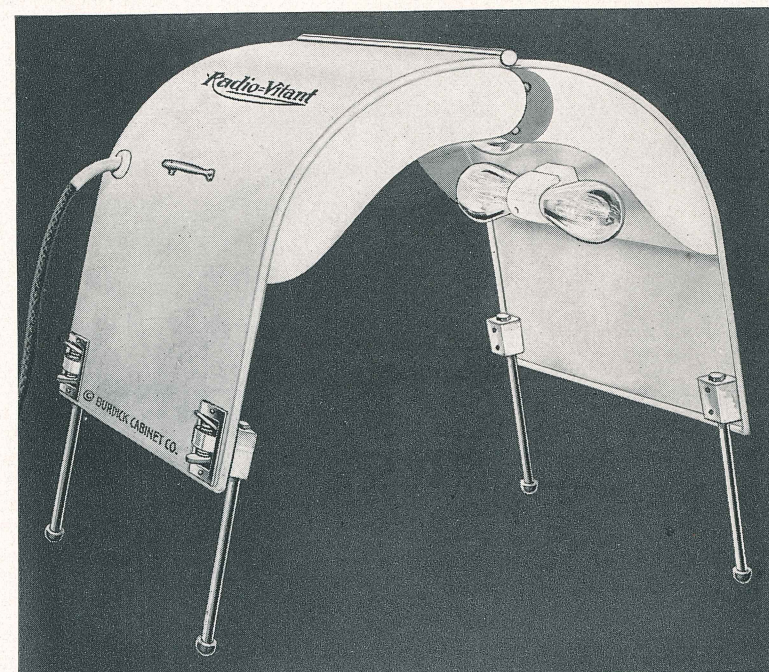


The Fold-in Cabinet makes the Light Bath possible in a very small space. Its mechanical specifications are, width 34 in., depth 37 in. open, 9 in. closed, height 45 in. Contains 24 60-watt tungsten lamps, on 2 circuits with 2 snap switches. Constructed entirely of steel and electrically welded. Finished in white lacquer with nickel trimmings. Adjustable metal stool, and excellent ventilation.

When folded against the wall, the Fold-in Cabinet takes less space than an ordinary radiator. It is also frequently installed in the wall so that when closed the front of the cabinet is flush with the wall.



VI The Type I Baker



It is unsurpassed for general toxic or eliminative treatments. Physicians find this Baker of great benefit in the treatment of neuritis, lumbago, sprains, arthritis, general toxemia, septic infection, and congestion of liver, kidneys, bowels, lungs, and pelvic organs.

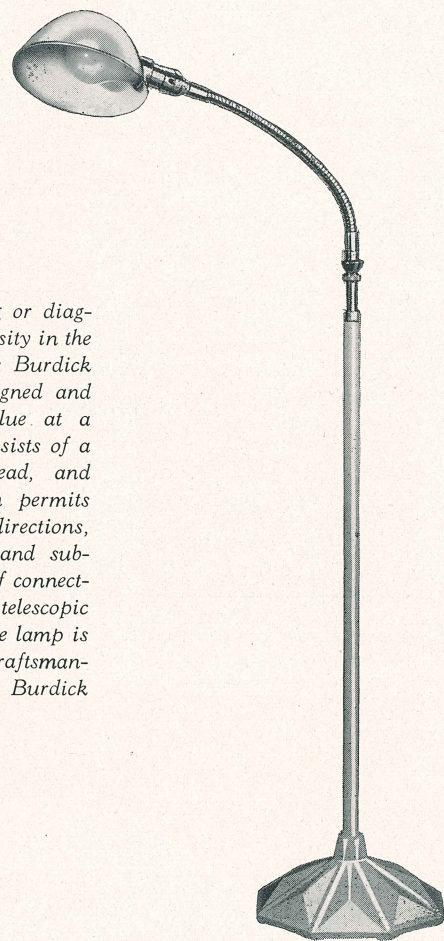
The unique construction of this Baker adapts it admirably for local applications to all parts of the body or for general raying. The Type "I" Baker is equipped with thermal insulation, two circuit switch, 8 60-watt Radio-Vitane lamps, 10 foot extension cord. Dimensions: Length 18 inches, width adjustable from 8 to 24 inches, height adjustable from 17 to 21 inches. Constructed entirely of steel.

I for A.C. or D.C.

VII
The Burdick Illuminating Lamp

An efficient illuminating or diagnostic lamp is a daily necessity in the well equipped office. The Burdick Illuminating lamp is designed and built to give unusual value at a relatively low cost. It consists of a nickel plated reflector head, and sturdy flexible arm which permits easy adjustment in all directions, with white enamel stand and substantial base, and 10 feet of connecting cord. The stand has a telescopic extension of 22 inches. The lamp is built and finished with the craftsmanship characteristic of all Burdick equipment.

Model IL-10

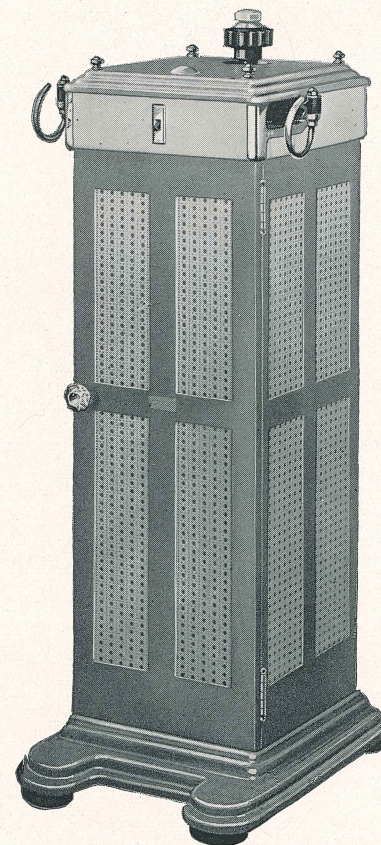


VIII
The Burdick Body Culturor

The Body Culturor stimulates the skin, the deeper tissues, and the circulation. It accelerates oxidation of waste materials. It constitutes one of the most valuable forms of intensive exercise, yet because it is passive, it is without injurious effects upon those persons who cannot take strenuous exercise.

The Body Culturor has a varied stroke and speed which makes possible any type of manipulation from soft, gentle stroking to vigorous kneading. The gear shift, the transmission, the oiling system, the bearings are built for perfect service and long wear.

B-10 for A. C. B-15 for D. C.



IX

The Burdick Morse Wave Generator

THE newest addition to the Burdick line is the Morse Wave Generator.

The Morse Wave Generator itself is not new, however, as it has been the standard of excellence among low voltage generators for years. Burdick, however, has taken the fundamental principles of the Morse Wave and cooperating with its original designers and builders, Dr. Morse and the T. M. Chapman's Sons Company, who still make the internal mechanism of the generator, have incorporated many important refinements. Both the original Morse Wave Generator and the new improved model have been designed and built with the help and close cooperation of one of the pioneers of low voltage therapy, Dr. Frederick H. Morse.

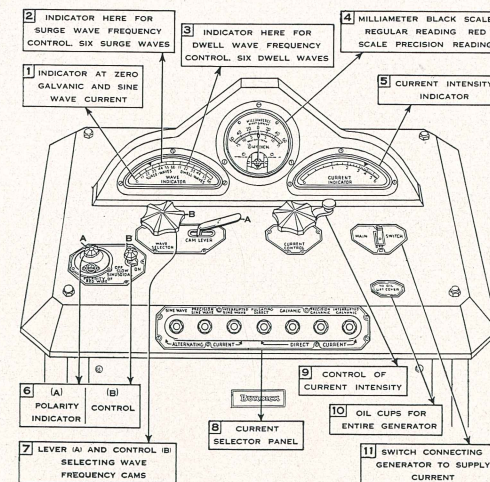
The Burdick Morse Wave Generator offered to the profession today permits of a precision and convenience of application of low volt currents never before achieved. For anyone who may be skeptical we sincerely urge a comparison between the Burdick Generator and any other make.



M-10 for A.C.
M-15 for D.C.

The Burdick Morse Wave Generator Produces:—

1. *Mechanical effects* with the sine wave.
2. *Chemical effects* with the galvanic (direct) current. Positive pole effects
Negative pole effects
Ionization
Metallic electrolysis.
3. *Physical effects*—A combination of mechanical and chemical effects.



The Control Board
of the Burdick Morse
Wave Generator.

Indications for Morse Wave Generator

Adhesions
Ankylosis
Arthritis
Atrophy, Muscular
Cervical Stenosis
Constipation
Colitis
Dysmenorrhea
Endometritis
Hair, removal of
Hemorrhoids
Intestinal Stasis & Ptois
Menorrhagia
Nerve testing
Neuralgia
Neuritis
Obesity
Paralysis
Rhinitis, Hypertrophic
Scar tissue

Sciatica
Stomach
Dilation and Ptois of
Warts

From the above list the following three important fields of usefulness stand out:

1. *Intestinal Stasis* with its many resulting conditions.
2. *Paralysis*, including Infantile, Central and Peripheral.
3. *Ionization and Electrolysis* in the treatment of such conditions as Otitis Media, Hypertrophic Rhinitis, Endometritis, Cervical Erosions, removal of superfluous hair.

Important Mechanical Advantages of the New Burdick Morse Wave Generator

Following are some of the outstanding features which account for the enthusiastic reception of the new Burdick Morse Wave Generator. Users report that "the current itself cannot be felt, only the effects," that "it is the only electrical device with which they have been able to treat children without fright," that "every phase of treatment is controlled positively and conveniently" by the scientifically arranged control board.

1. *Variable Air Gap, Magnetic Current Intensity Control.* No sliding contacts—the smoothest possible control.

2. *Simple Cam Selecting Device,* without sliding contacts, brushes or resistance coils. Easily operated and gives definite and positive wave forms.

3. *All Currents Smoothly* brought down to and raised from zero.

4. *A Constant Speed Motor* without brushes to adjust or replace.

5. *Universal Single Plug* for all currents. Polarity selection simple and certain.

6. *Convenient Panel Board.* Every current plainly indicated as follows:

- (a) Sine Wave
- (b) Precision Sine Wave
- (c) Interrupted Sine Wave
- (d) Pulsating Direct Current
- (e) Galvanic Current
- (f) Precision Galvanic Current
- (g) Interrupted Galvanic

7. *On each of the above currents there are*

Six surge waves superimposed,

Six dwell waves superimposed,

Six slow sinusoidal surge waves superimposed,

Six slow sinusoidal dwell waves superimposed.

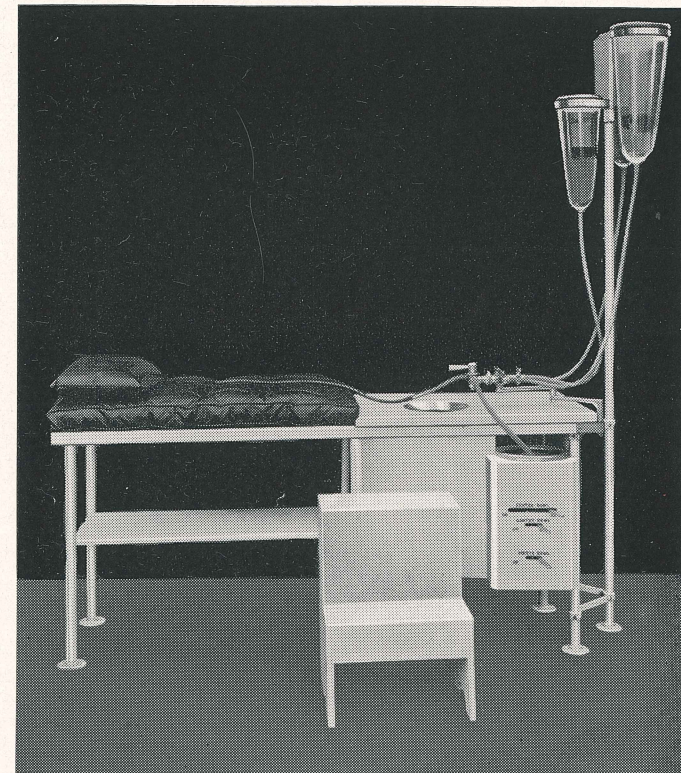
8. *Asbestos, Rubber Covered Treatment Pads.* Sanitary, durable.

9. *Complete Unit Enclosed* in compact cabinet with two drawers for complete line of accessories.

10. *Smooth Surfaces,* easily kept clean. Sturdy construction, durable, pleasing finish—a Burdick product.

X

New Burdick Colonic Irrigation Apparatus



Colonic Irrigation and medication as a therapeutic agent has been receiving a great deal of attention from Proctologists and other physicians who have been specializing in diseases of the lower intestinal tract.

With the realization that the colon is often the seat of infection for many diseases which have resisted medical treatment, the importance of adequate methods for treatment of this organ is apparent.

With the Burdick appar-

atus one phase of the Colonic Irrigation treatment is a thorough cleansing of the colon and removal of waste material which accumulates in a poorly functioning colon and results in toxins being absorbed into the system. Another important phase of the treatment is the application of proper medication so as to make for a healthy intestinal flora.

Careful examination of the contents of the colon will determine the infecting organisms, as well as data relative to acidity, alkalinity, presence of mucous, blood, etc.

With this knowledge, proper medication is readily applied to the colon in connection with Colonic Irrigation.

Therefore it can be readily appreciated that the use of a Colonic Irrigator becomes a scientific procedure and one that gives definite results.

With the Burdick Colonic Irrigation equipment every provision has been made for doing the work properly and conveniently.

Important Features of Burdick Apparatus

The Burdick Colonic Irrigation Apparatus consists of a steel table electrically welded, with six legs strongly

braced, a wooden top piece, with a hair filled, thick leatherette mattress with pillow providing utmost comfort to the patient while receiving treatment.

Three percolators are furnished for holding different solutions. Two are of two-gallon size and one of one-gallon size.

The irrigation and medication is controlled accurately and conveniently by an assembly consisting of three individual valves to control the pressure and flow from each percolator and a three-way valve to control the flow of the solutions into the colon. The return of discharge matter as well as a drain from the percolators is accomplished with this same valve. A simple universal joint provides a means of easily disconnecting this valve for sterilizing purposes.

The entire valve assembly is mounted on a jointed swinging arm that can be brought to any position during the treatment and swung out of the way when not in use. The connections between the percolators and valves are made with pure gum rubber tubing.

The table is provided with a central discharge bowl made of rust-proof monel metal, conveniently located, and the

table top forms the toilet seat. The discharge bowl is provided with a 2" quick action valve so that at any time desired discharge material can be held for examination. The bowl is provided with connections for sewage outlet.

A second monel metal discharge bowl is located at the foot of the table to receive the discharge from the two-way valve and this is also provided with connections for sewage outlet.

Both the central bowl and waste bowl have flushing systems controlled by separate quick-acting valves. The valve control for the bowls and flushing system is located at the end of the table, convenient for the operator.

A shelf is provided for towels and linen and steps for mounting the table are also provided for the convenience of the patient. All metal parts are nickel-plated and the table is finished in five coats of white enamel.

PRICE LIST

All Prices F. O. B., Milton, Wis.

New Super-Standard Air-cooled Quartz Lamp—	
LA-423 for A. C.....	\$ 450.00
LA-123 for D. C.....	325.00
Portable Bedside Unit—LA-410 for A. C. or D. C.....	375.00
Truck—PUS-82 (with handle bars).....	20.00
Truck—PUS-81 (without handle bars).....	15.00
Prescription Model Quartz Lamp—	
RX-20 for A. C.....	170.00
RX-10 for D. C.....	170.00
Helthlite, Standard Series	
Floorstand Model—UV-550 for A. C.....	96.50
UV-250 for D. C.....	87.50
Table Model—UV-540.....	76.50
Table Model—UV-240.....	67.50
Wall Bracket Lamps	
LA-424 for A. C.....	460.00
LA-124 for D. C.....	335.00
Ultra-violet Solarium Equipment	
1 Lamp Type—S-10 for A. C.....	425.00
S-15 for D. C.....	300.00
2 Lamp Type—S-20 for A. C.....	850.00
S-25 for D. C.....	600.00
4 Lamp Type—S-40 for A. C.....	1700.00
S-45 for D. C.....	1200.00
6 Lamp Type—S-60 for A. C.....	2550.00
S-65 for D. C.....	1800.00
Automatic Conveyor Solarium	
For A. C.....	8200.00
For D. C.....	7400.00
Infra-red Solarium Equipment	
Single Unit Type—Z-30S for A. C. or D. C.....	110.00
Double Unit Type—Z-30S-2 for A. C. or D. C.....	200.00
Self Contained Mobile Unit, Receptor Model	
LW-505 for A. C.....	655.00
LW-205 for D. C.....	525.00
Self-Contained Mobile Unit, Suspension Casing Model	
LW-510 for A. C.....	700.00
LW-210 for D. C.....	570.00
Faucet Type Receptor Model Water-cooled Lamp	
LW-530 for A. C.....	475.00
LW-230 for D. C.....	350.00
Faucet Type Water-cooled Lamp, Suspension Casing	
Model—LW-531 for A. C.....	520.00
LW-231 for D. C.....	395.00
Self-Contained Combination Model Quartz Mercury	
Arc Lamp—LAW-640 for A. C.....	920.00
LAW-340 for D. C.....	790.00
Faucet Type Combination Lamp	
LAW-660 for A. C.....	740.00
LAW-360 for D. C.....	615.00
Zoalite Infra-red Equipment	
Z-30 Zoalite for A. C. or D. C.....	125.00
Z-12 Zoalite for A. C. or D. C.....	49.50
Z-70 Zoalite (gray) for A. C. or D. C.....	19.50
RV-85 Zoalite (peacock blue floor-stand model)	
for A. C. or D. C.....	19.50
RV-90 Zoalite (peacock blue table model)	
for A. C. or D. C.....	16.50
RV-80 Zoalite (peacock blue hand model)	
for A. C. or D. C.....	12.50
Light Bath Cabinets	
A—Professional Model for A. C. or D. C.....	650.00
K—American Model for A. C. or D. C.....	495.00
E-32—Milton Model for A. C. or D. C.....	325.00
H—Fold-in Model for A. C. or D. C.....	295.00
Body Culturor	
B-10 for A. C.....	285.00
B-15 for D. C.....	285.00
Deep Therapy Lamp DT-1005 for A. C. or D. C.....	125.00
Baker—Type I for A. C. or D. C.....	49.50
Illuminating Lamp IL-10 for A. C. or D. C.....	10.00

BURDICK LIGHT THERAPY EQUIPMENT

Part Two
**Water-Cooled
Quartz Lamps**



ISSUED BY
The Burdick Corporation

MILTON, WISCONSIN

E.F. MAHADY CO.
851 BOYLSTON ST.  BOSTON MASS.

BURDICK LIGHT THERAPY EQUIPMENT

PART TWO



The New Series of
EVER-CLEAR
Water-Cooled Mercury Arc
Lamps

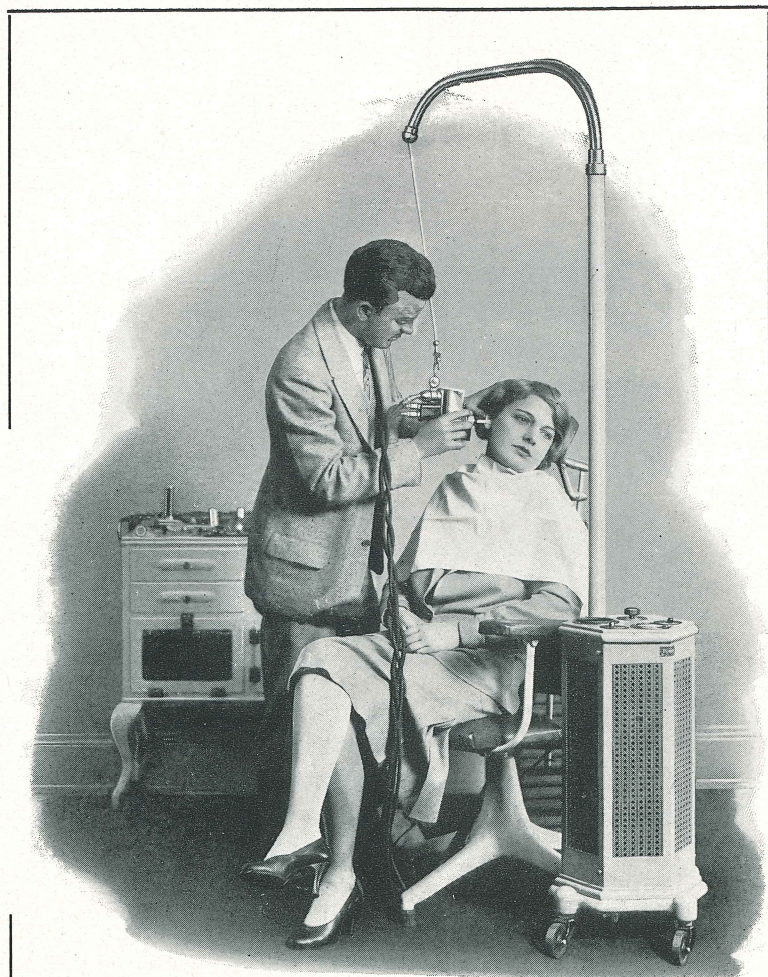
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MILTON, WIS.

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THE Medical Profession has asked us for Water-Cooled Mercury Arc Lamps that are true precision instruments—that insure accurate measurement of Ultra-violet dosage to facilitate exact technic. In these new Burdick Units, we present generators that answer every requirement in the laboratory and in the clinic. They have a definite therapeutic action—are indicated in definite conditions — to secure definite results. Every one is equipped with the patented **EVER-CLEAR** Water-Lens Window. In every essential point they represent a tremendous advance over any other Water-Cooled Mercury Arc Lamp manufactured today.



Treatment of Otitis Media

Suspension Casing Model

LW-231 for D. C. LW-531 for A. C.

(Equipped with New Ever-Clear Quartz Window)

The Field of the Water-Cooled Mercury Arc Quartz Lamp

The medical profession appreciates and utilizes the power of the long, tonic Ultra-violet wave lengths generated by the Air-Cooled Mercury Arc Lamp. But the short, bactericidal wave lengths whose value in therapeutics is at least as great, if not greater, are neglected by many physicians who would find them invaluable in their work.

The Ultra-violet rays shorter than 2900 Angstrom units are powerfully bactericidal. This has been proved clinically and in the laboratory—proved beyond question. So striking are the results obtained that these rays are often described as "surgical" Ultra-violet.

While the Air-Cooled Lamp, designed for systemic treatments, exerts its beneficial influence over the general health of the patient, the Water-Cooled Lamp destroys the focus of infection. It strikes at the very source of disease—with intense, local applications of one of the most powerful forces known to medical science. And unlike the X-ray and certain medical bactericides it can not destroy the body tissues. Even when it is necessary to employ a powerful, blistering dose, the tissues themselves, under the regenerative influence of Ultra-violet, return rapidly to normal. In surface infections and orificial pathologies the physician finds these short rays an invaluable adjunct to ordinary measures.

Because of its convenience and cleanliness, because of the brief periods of treatment necessary to positive results, the Burdick Water-Cooled units are preferred by specialists in many fields. In dermatology, in gynecology, in eye, ear, nose and throat diseases, and in genito-urinary conditions excellent results are being secured. In dentistry, too, Water-Cooled Ultra-violet is extremely successful. The general practitioner, influenced by similar reasons, finds innumerable cases in his practice which react promptly and favorably to Ultra-violet light.

Among the conditions in which Water-Cooled Ultra-violet has been highly effective are Acne, Lupus, Eczema, Favus, Furunculosis, Herpes Zoster, Psoriasis, Ulcers, Impetigo, Wounds, Tubercular Sinuses, Vaginitis, Gonorrhea, Cystitis, Urethritis, Prostatitis, Epididymitis, Bubo, Otitis Media, Pharyngitis, Vincent's Angina, Blepharitis, Conjunctivitis, Corneal ulcers, Tonsillitis, Rhinitis, Pyorrhea and Stomatitis.

Burdick Brings Water-Cooled Ultra-violet Therapy to a Plane of Scientific Precision

A specialist in Ultra-violet therapy has said that of all the cases presented to him for treatment, over seventy per cent required irradiations under the Water-Cooled Lamp. When one considers the great variety of conditions in which local treatment of the focal infection or of surface lesions is essential, it becomes obvious that this figure is an accurate one. Yet the imperfections of the early mercury arc lamps made it difficult for the physician to use this type of treatment confidently and successfully.

Burdick has changed all this. Our great contribution to the field of Ultra-violet therapy—the EVER CLEAR Quartz Window—eliminates all the old difficulties and places this branch of therapeutics upon a high plane of scientific precision.

In other makes the casings are cooled by a stream of water that passes between and across the faces of the quartz windows. Impurities in the circulating stream absorb much of the Ultra-violet. Gradually these impurities become deposited upon the faces of the window in an ever-thickening screen—and the efficiency of the generator thus decreases day by day. Dosage has to be increased steadily and accurate technique becomes impossible.

You have several variables to deal with in Ultra-violet therapy. The efficiency of your generator **must not be one of them.** The efforts of the Burdick Research Department to eliminate this vital weakness resulted in the development of the EVER-CLEAR Quartz Window which delivers the maximum intensity of the short, germicidal wave lengths—and **maintains this intensity permanently at the peak.**

The EVER-CLEAR Quartz Window

The faces of the EVER-CLEAR Window can never become clouded or discolored no matter how impure the water stream may be. For the window is cooled by water that flows **around its circumference** instead of across its face. No impurities can possibly intervene to screen out a fraction of your Ultra-violet intensity. The window remains just as clear and transparent to Ultra-violet after a thousand hours use as it was the day it left the factory.

You deliver to the area treated **all** of the short wave lengths generated by the mercury arc. You work with a much higher intensity—the first essential to positive results. You don't have to estimate the daily loss in the efficiency of your window. You **know** that it remains constant.

The Importance of Intensity

We have said that the intensity of the Ultra-violet energy delivered by your generator is the true measure of its therapeutic value. All recent experiments bear out the truth of this irresistible conclusion. High intensity is **essential** to positive results.

Time is the essence of office practice. So the factor of intensity assumes an added importance. Exposures are measured in seconds with the high intensity delivered by Burdick Units. The physician is enabled to treat a large number of patients more quickly; more conveniently and more effectively than ever before.

The Sealed Water Lens

The mercury arc emits a certain proportion of Infra-red rays. Since many treatments are given in contact with the skin surface, it is necessary to eliminate these rays and present a cool working face for the window.

A sealed lense of triple distilled water screens out all the heat rays—while transmitting all the Ultra-violet. The outer face of the EVER-CLEAR Window is 20% cooler than the old windows cooled by streams passing across the faces.

A hollow cell in the quartz is partially filled with the triple-distilled water under vacuum. The evacuated space with the appearance of a bubble permits the necessary expansion of the water as the heat rays are absorbed.

Heat by conduction is eliminated by an air space between the quartz lens and the outer window of rock quartz. Thus you

work with a cool ray, a shorter ray, and a ray of greater intensity than that produced by any other generator made today.

The EVER CLEAR Quartz Window with the sealed Water Lens is furnished in all Burdick Water-Cooled Units. It is an exclusive feature, fully protected by patents. No other equipment contains this factor so vital to scientific precision.

The Uviarc Quartz Burner

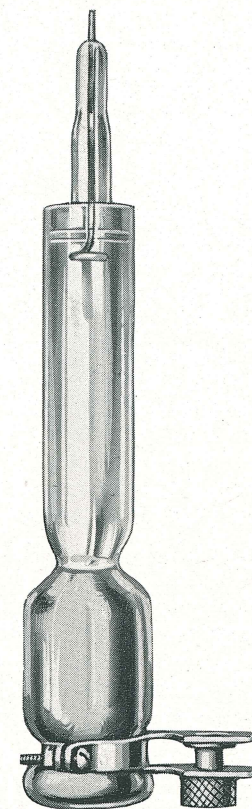
The source of your Ultra-violet radiations is a mercury vapor arc in quartz—the famous Uviarc high intensity burner. This highly efficient generator is manufactured by the Cooper-Hewitt Electric Company, and is used in all Burdick Water-Cooled Mercury Arc Lamps.

This type of burner possesses several characteristics which make it decidedly superior to any other. The most important is the fact that it is made on a straight line. When one realizes that the quartz burner in a Water-Cooled Lamp must necessarily be in a vertical position, the desirability of this straight construction is obvious. Other Water-Cooled Quartz Burners, as a general thing, are rather U-shaped, which means that the arc must follow the curve of the burner. The fact that the arc hits the curved quartz abruptly in this type of burner, necessarily hastens devitrification and exhaustion of the Quartz tube.

A second, and very pronounced advantage, lies in the fact that the Uviarc burner can be readily disconnected from the Water-Cooled casing and sent back to the factory for repairs or replacement if it is ever necessary. In contemporary Water-Cooled Lamps, the burner is an integral part of the casing, and if repairs are required, the entire casing must be shipped back to the manufacturer.

It is generally admitted that the Uviarc Quartz tube is finished both within and without, in a glazed surface of higher brilliancy than that of other types of burners. This means that the ratio of depreciation is less in the Uviarc for the following reasons: The rougher the inner surface of the tube, the more rapidly any foreign material, such as tungsten or silicon dioxide, will deposit on the surface. Inasmuch as the Uviarc has been "fire polished" so that its inner and outer surfaces are astonishingly brilliant, the depreciation incident to such deposits is less rapid than in other types.

Other advantages of the Uviarc on which one might discourse at some length are simplicity of design, high rating and ease of starting.



Uviarc Quartz Burner

Used in all Burdick Water-Cooled Quartz Lamps

Accurate Measurement of Dosage and Exact Technique

Almost from the beginning of Mercury Arc Lamp manufacture, Burdick realized that the ideal to be striven for was a system of measurement and control that would insure accuracy of dosage and exact technique.

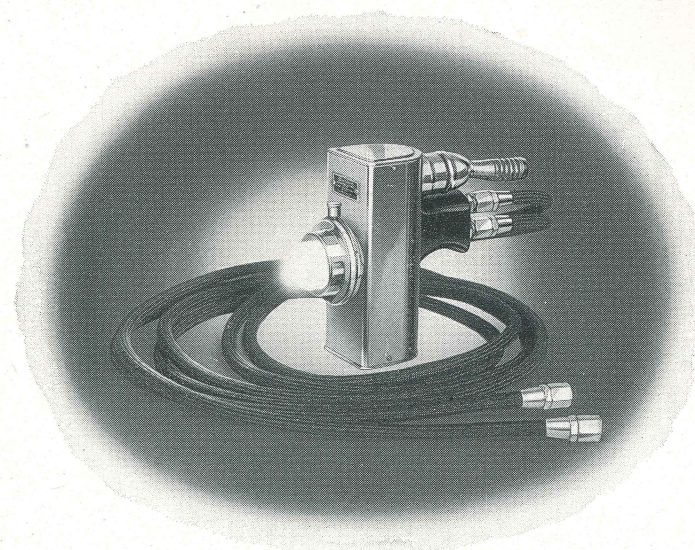
A great step forward was the development of the Voltmeter and Voltage Regulator, which have since been characteristic of all Burdick Mercury Arc Lamps and which have contributed immensely to the popularity which the Burdick series enjoys with the Medical Profession.

Voltage varies. It will be higher in the daytime when the demands upon it are comparatively lighter than it will be at night when every one is using electricity. Then again there are various other factors entering into the production and maintenance of an electric current which produce fluctuation in the voltage. Satisfactory results in Ultra-violet therapy depend upon a precise technique—a precise technique depends upon exact dosage—and exact dosage depends upon the adequacy of the means being employed for measuring and controlling the electrical energy.

The Voltmeter will instantly detect any fluctuation in the line voltage and with the Voltage Regulator, any such fluctuation may be quickly corrected. Cooling prongs are carefully adjusted to keep the amperage constant. One cannot help wondering how satisfactory results can possibly be obtained when the operator has no method of checking the current or of correcting irregularities.

The EVER-CLEAR Quartz Window removed the final obstacle in the path of perfect scientific precision. Keep the voltage that operates your burner constant and the Ultra-violet intensity delivered to your patient remains constant indefinitely. You can predict with complete confidence the reaction to be secured from a given exposure. The only variable remains the condition of your patient.

In addition to the Voltmeter and Voltage Regulator, Burdick Water-Cooled Lamps are equipped with intensity switches which are capable, almost instantly, of raising the voltage from an approximate 55 to 75. This high intensity is invaluable in conditions where an exceptionally powerful bactericide is demanded.



The New Burdick Water-Cooled Casing

(Equipped with Ever-Clear Quartz Window)

Rigid tests recently completed in the laboratories of one of our great universities show that the Ever-Clear Quartz Window results in an increase in efficiency of 45% over new casings of other types and an increase of more than 600% over casings of other types that have been in ordinary use for one month.

No other invention has approached the vital significance of the Ever-Clear Window in bringing Water-Cooled Ultra-violet therapy to a plane of strict scientific precision. This window alone makes possible accurate measurement of dosage and exact technique.

The Water-Lens filters out the Infra-red rays so that the window remains cool even after prolonged series of treatments.

The Burdick D-Shape Casing

Possibly no other individual part or feature of Burdick equipment owes more to the painstaking experimental work of the Burdick staff than the special D-Shape Water-Cooled Casing. Here the constant striving for perfection has resulted in an instrument which answers every theoretical and practical requirement.

Here is an instrument light in weight and adapted to the delicate technique required in orificial work, yet one which can be used day after day without damage or deterioration—the most durable and efficient on the market. The D-Shape not only fits the hand comfortably but brings the Uviarc burner as close as possible to the face of the window.

The Burdick casing is the first tubular type of Water-Cooled Lamp casing ever developed. Previously, Water-Cooled casings were so constructed that the water was in contact with the jacket of the quartz burner, the burner itself being set in a compound. Consequently, the whole casing had to be returned to the manufacturer whenever the owner of the lamp desired to replace the generator. There was also grave danger of this compound becoming over-heated and ruining the generator. The Burdick casing is so constructed that the burner can be removed, without in any way disturbing the water circulation, by simply pressing a spring and removing the end cap.

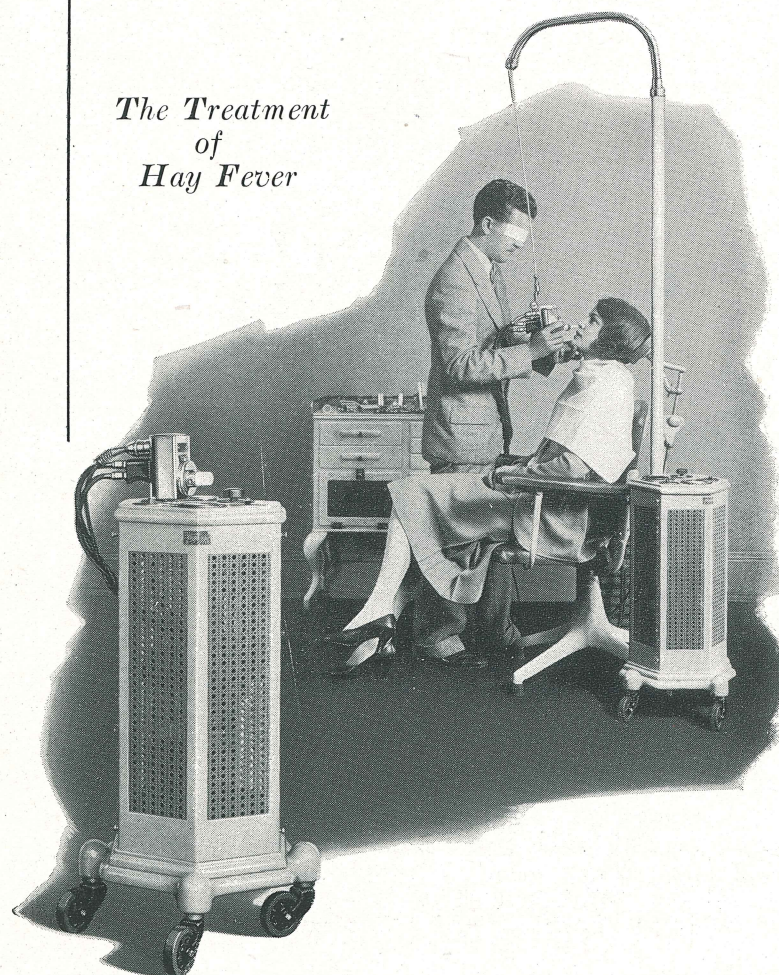
The water circulation in the casing is so arranged that uniform cooling is obtained with absolute protection to all the delicate parts of the lamp, thus avoiding the possibility of breakage.

The following list of exclusive Burdick features, included in the construction of the Water-Cooled casing clearly establishes Burdick's claim to superiority:

1. The shape of the casing was carefully studied, and at first a few cylindrical casings were made. The "D" shape casing was finally adopted, first of all to shorten the distance between the Uviarc Generator and outer window to an absolute minimum. The value of this becomes obvious when one remembers that the intensity of radiation is approximately in inverse proportion to the square of this distance.

2. The entire casing is made of light pressed metal parts all constructed by precision dies, thus avoiding the weight necessary in using casting construction generally employed to eliminate expensive tools required to construct such casings.

The Treatment of Hay Fever



Illustrating Two Models of the Faucet Type

(Equipped with the EVER-CLEAR Window)

3. The Burdick Water-Cooled casing fits the operator's hand perfectly. The operator's fingers close about it in a natural grip. Being light in construction, it can be handled with comfort and ease.

4. Still another feature which lifts the Burdick casing into a class by itself is the patented locking device for the Adaptor (which receives the various quartz applicators used in orificial work). To remove the adaptor from the Burdick casing, one needs simply to press the button.

5. The Uviarc burner is easily accessible. A push button spring releases the end cap.

The Burdick Series of Water-Cooled Mercury Arc Lamps

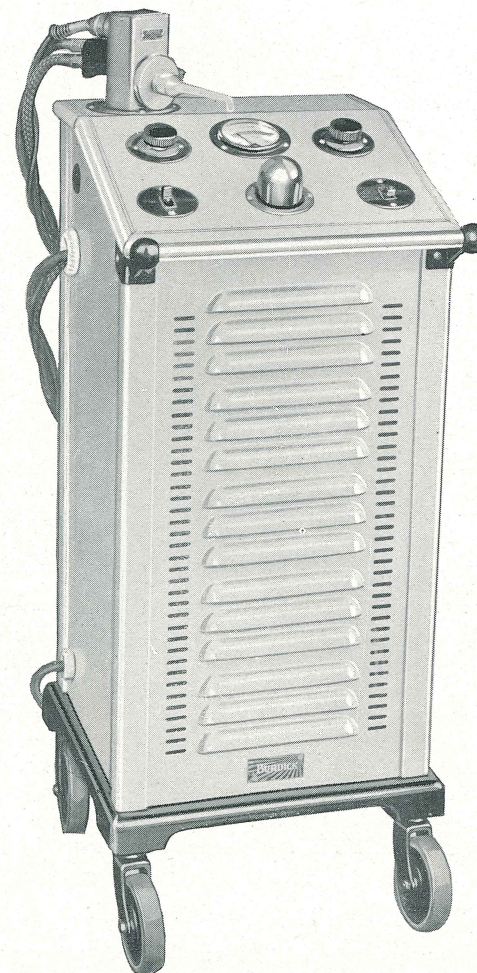
Six models are included in the Burdick Water-Cooled Mercury Arc Series. There are two Self-Contained units: the Receptor model and the Suspension Casing model; three Faucet Type units: the Receptor model, the Suspension Casing model and the Extension Arm model; and one Portable Self-Contained unit.

The Self-Contained Mobile Unit

The prince of the line—the most efficient and adaptable Mercury Arc Lamp in existence—is the Self-Contained Mobile Unit. As is implied by its name, the two features which really distinguish this instrument are its easy mobility and the fact that it carries its own water supply, independent of any faucet connection, or outside source of supply. These advantages, together with the fact that it may be operated constantly without overheating, make it an ideal model for use in the hospital or by the specialist in physiotherapy.

A summary of the distinctive features of this equipment follows:

Continuous Operation: Constant use, without overheating, is assured by an improved forced-air radiator type cooling system, made practical by a new design pump unit using a constant speed alternating or direct current motor of a larger size. This provides a constant flow of water at high pressure regardless of fluctuation in line voltage during the building-up period of the lamp.



LW-505 for A. C. LW-205 for D. C.

Burdick Self-Contained Mobile Unit

All water connections between the pump and radiators are made with brass couplings eliminating objectional hose connections.

Control: By the Special Burdick system of selective switches, it is possible to operate either the Water-Cooled or Air-Cooled Lamp at its respective voltage of 55 and 75. This eliminates the possibility of starting more than one lamp at a time when using a Combination unit.

The Water-Cooled Lamp and Water-pump motor are energized simultaneously when the selective switch is set on the Water-Cooled position. This protects the Water-Cooled Lamp from being operated without the water flowing, provided there is water in the radiator. The presence of water is indicated by the water-flow indicator, while the fact that the Water-Cooled Lamp is energized is made known by the pilot lamp.

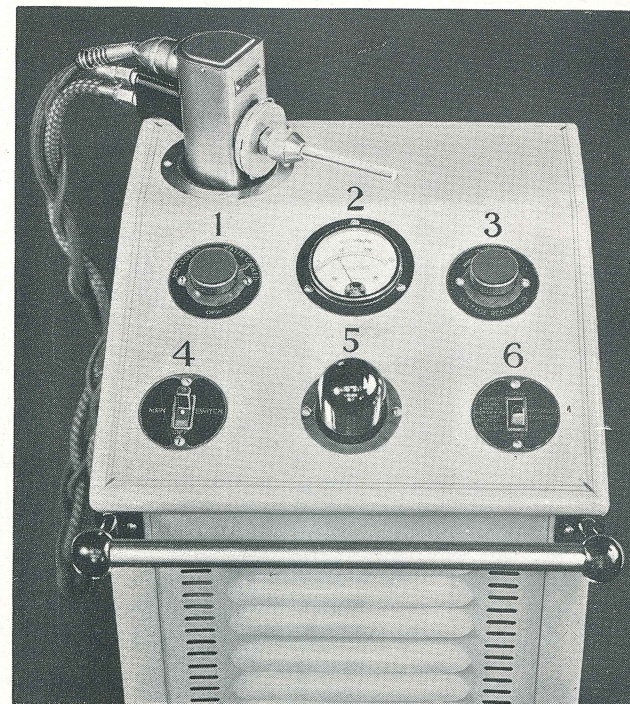
The voltage of either the Water-Cooled or Air-Cooled Lamp is regulated by the Voltage Regulator, and the voltage of the Uviarc is accurately measured by a Voltmeter. In addition to these controls, there is a main off and on switch, and an intensity switch which provides a normal and a high voltage.

High Voltage: Many physicians feel that there are certain pathological conditions that must be treated by more intense application of Ultra-violet radiation than has been available heretofore. Voltage on this lamp may be increased from 55 to 75 almost instantly by simply throwing the intensity switch to high.

Accessibility of Parts: The new unit is provided with a removable door located in the rear of cabinet. With a slanting top construction it is obvious that switches, meter, etc., located directly under the top are easily accessible. This is also true of all other working parts requiring lubrication. Care has also been taken to provide a simple means for draining and filling the water system.

Extreme Mobility: This Self-Contained Unit is provided with a hand rail and is mounted on four ball-bearing casters with 4" solid rubber-tired wheels so that the lamp may be moved from bed to bed, or about the office very easily.

Improved Receptor for Water-Cooled Casing: The Receptor for holding Water-Cooled Casing, places the casing within easy reach of operator, and in position where it is impossible to accidentally strike the casing when moving unit through doorway or other close quarters. This Receptor is lined with special heavy rubber to prevent any marring of the finish on the casing.



Control Board

New Burdick Self-Contained
Mobile Unit

Water-Cooled

1. Selective Switch
2. Voltmeter
3. Voltage Regulator
4. Main Switch
5. Water-Flow Indicator
6. Intensity Switch

The D-Shape Water-Cooled Casing is illustrated in the Receptor, at the upper left-hand corner.

Relay Starting Device: This unit is equipped with the Burdick relay switch system for automatically reducing the build-up period of the Water-Cooled Lamp.

The Self-Contained Suspension Casing Model

The Burdick Water-Cooled Lamp Casing is the lightest on the market. It is as light as it can be made compatible with durability, yet even so insignificant a weight will grow irksome if one has to support it hour after hour.

This type of lamp was devised for those specialists who spend many hours a day working with the Water-Cooled Lamp and who must maintain a delicate precision of technic—the Eye, Ear, Nose and Throat man, the Urologist, Gynecologist, the Dermatologist and the Dentist. It is also, of course, peculiarly adapted to the nurse or physiotherapist whose time is wholly devoted to giving treatments.

As you can readily see from the appearance of this model, it is an adaptation of the Self-Contained Mobile Unit which we have just finished describing. In fact, this is the Self-Contained Mobile Unit. The only difference is this: that this casing is suspended from an upright with an extension arm, and counter-balanced. This device takes the entire weight of the casing from the operator's wrist and forearm, leaving him free to direct the applicator to the tissue which he wishes to radiate.

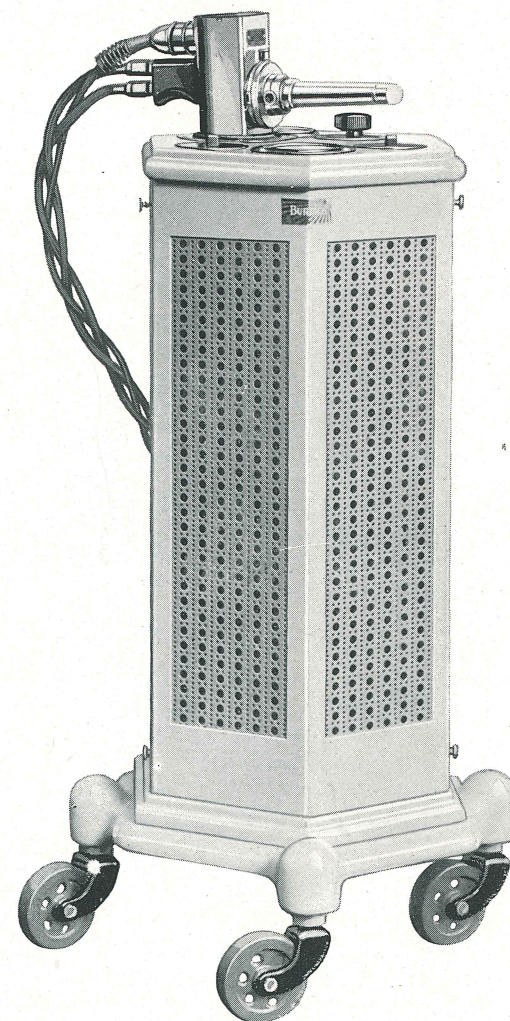
The Faucet-Type Series of Water-Cooled Mercury Arc Lamps

As another great contribution to the medical profession, Burdick brings out a new series of Faucet-Type Water-Cooled Mercury Arc Lamp. These compact, economical models secure their water cooling stream direct from the nearest cold water faucet.

These models, three in number, are destined to become increasingly popular with operators for the following reasons:

1. Elimination of the Precipitation and the Discoloration Threat.

The old type of Water-Cooled Lamp and, incidentally, modern lamps of other makes, are subject to quick discoloration and



LW-530 for A. C. LW-230 for D. C.

The Receptor Model of the Faucet Type Water-Cooled Mercury Arc Lamp

clouding of the quartz window because of the various mineral and organic matter in the water supply. This was true even when distilled water was used; it is doubly true, of course, when the cooling agency is a direct open faucet.

The patented EVER-CLEAR Window absolutely eliminates this danger. The open faucet is now as safe and dependable as distilled water. In fact, one could operate the new Burdick Water-Cooled Lamps with river water successfully.

2. New Hexagonal, Cane Pattern Control Cabinet

In order to add greatly to the adaptability of these Faucet-Type models and to effect a real economy in their construction, Burdick devised an entirely new type of control cabinet. This cabinet is 28 inches high, is constructed of perforated steel with a full panel, cane pattern effect, is beautifully finished in grey duotone lacquer with nickel trimming and rests upon a 4-point base mounted on 4 3-inch ball-bearing rubber-rollers. The control board on each of these Faucet-Type models is identical and similar to that which has always been a feature of the Self-Contained Mobile Unit. These controls include in addition to the main switches, a Voltmeter, a Voltage Regulator and a high intensity switch. Each of these control boards is equipped with two sockets so that it may be used at will with either an Air-Cooled or a Water-Cooled Lamp.

The Receptor Model

This is the most economical of the three Faucet-Type Water-Cooled Lamps. While it does not carry any unnecessary fixtures, nothing that is essential in any degree has been omitted. It is designed particularly for short applications of intense Ultra-violet and for such a purpose is ideal.

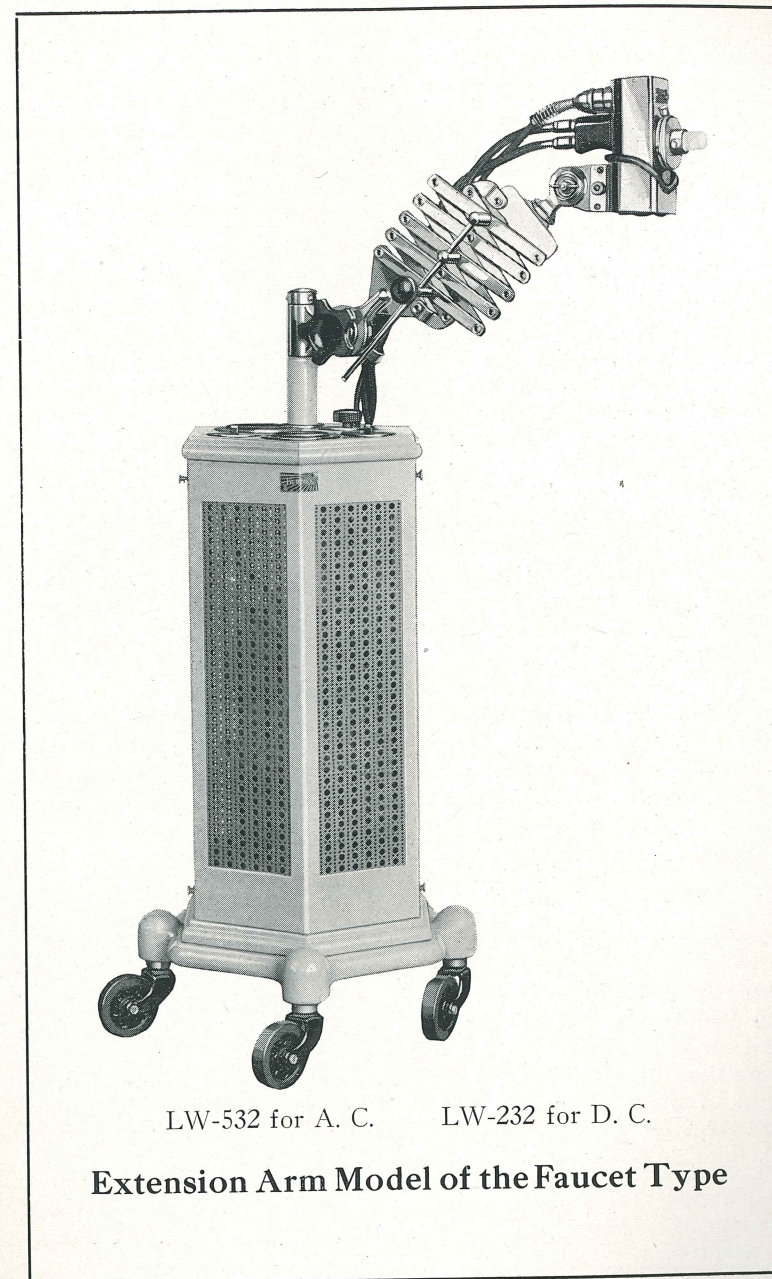
The Extension Model

This type is equipped with the Burdick Extension Arm which has become familiar to the physiotherapists. This arm is of nickel, has an extension of 24 inches, and is provided with two locks which hold it in any position desired, thus making possible a precise technique.

The Suspension Casing Model

So cordial was the reception accorded to the Self-Contained Suspension Casing Model that Burdick decided to continue this feature, adapting it to the Faucet-Type Lamp.

It is not necessary to discuss this feature at length because all of its advantages have been clearly set forth in that section of this booklet dealing with the Self-Contained Mobile Suspen-



LW-532 for A. C.

LW-232 for D. C.

Extension Arm Model of the Faucet Type

sion Casing type. It will suffice to say that with the new Burdick EVER-CLEAR Window which insures against discoloration and clouding, with the new control cabinet and with this counter-balanced casing, the specialist will find a delicate, precise and reliable instrument which will delight him by the manner in which it meets his exacting demands.

The New Burdick Portable Self-Contained Water-Cooled Mercury Arc Lamp

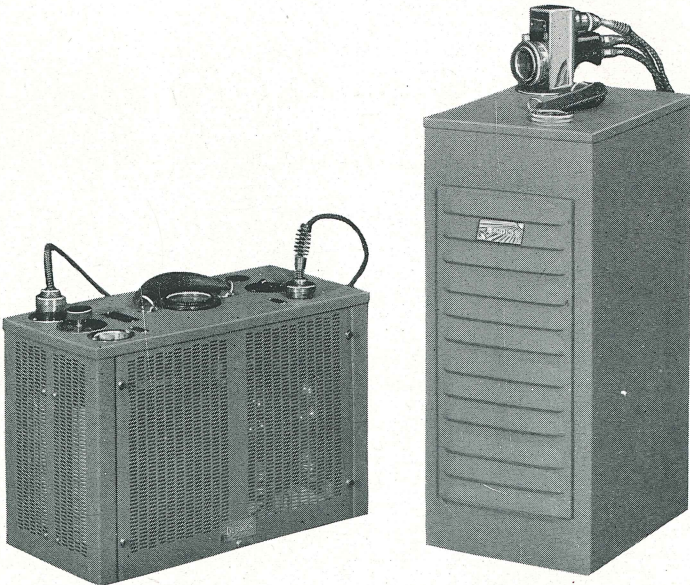
Still another notable 1927 Burdick development was the Water-Circulating Unit. This unit, in itself, consists of a radiator, pump, motor and fan. When the casing with accompanying hose is added and electrical connection is made to a Portable Air-Cooled rectifier—which can be purchased separately—the physician is in possession of a Self-Contained Portable Water-Cooled Lamp.

The Water-Circulating Unit and the Portable Air-Cooled rectifier are both equipped with strong leather handles so that portability of this model is not only a name but also a fact. The advantages of this model will at once be obvious to any physician interested at all in physiotherapy and, consequently, need not be discussed here.

Workmanship

No motor car, not even a Packard or a Rolls-Royce, is constructed with finer craftsmanship and more attention to detail than is bestowed upon Burdick Quartz Lamps. As they leave the factory they are guaranteed against defective material and defective workmanship, so that they may be bought with that assurance which is earned by conscientious manufacture—that kind of manufacture upon which reputation is built and perpetuated.

In the new Burdick Water-Cooled units the Medical Profession possesses the precision instruments they have always demanded and the future of Water-Cooled Ultra-violet Therapy is assured.



LW-520 for A. C. LW-220 for D. C.

**The New Burdick Portable Self-Contained
Water-Cooled Mercury Arc Lamp**

(Equipped with Ever-Clear Quartz Window)

*Burdick Authorized Distributors
in the United States and Canada*

Albany.....	Weinig X-Ray Co.
Atlanta.....	American Surgical Supplies, Inc.
Atlantic City.....	Charles Lentz & Sons, Inc.
Binghamton.....	Weinig X-Ray Co.
Birmingham.....	Doster-Northington, Inc.
Boston.....	General X-Ray Co.
Buffalo.....	Weinig X-Ray Co.
Chicago.....	The Burdick Corporation.
Cincinnati.....	Schuemann-Jones Co.
Cleveland.....	Schuemann-Jones Co.
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Kansas City, Mo.....	Rosenthal X-Ray Company.
Los Angeles.....	Bush Electric Corporation.
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Memphis.....	Dick X-Ray Company.
Milton, Wis.....	Victor Hurley.
Milwaukee.....	Pengelly X-Ray Company.
Minneapolis.....	Pengelly X-Ray Company.
Montreal.....	Casgrain and Charbonneau.
New Orleans.....	Surgical Sales Company.
New York City.....	Ille Electric Corporation.
Norfolk.....	Powers and Anderson, Inc.
Oklahoma City.....	Rosenthal X-Ray Company.
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Philadelphia.....	Charles Lentz & Sons, Inc.
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Rochester.....	Weinig X-Ray Co.
St. Louis.....	Dick X-Ray Company.
Salt Lake City.....	James W. Reeve.
San Francisco.....	Bush Electric Corporation.
Seattle.....	Shaw Supply Co., Inc.
Shreveport, La.....	Surgical Sales Company.
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Washington.....	Kloman Instrument Company.
Windsor, Ont.....	G. A. Ingram Company.
Winnipeg.....	Fisher and Burpe, Ltd.

Burdick Ultra-violet Equipment

For the Dentist



Technic Compiled in collaboration
with

FREDERICK W. LAKE, D. M. D.

Director X-Ray Department

Tufts Dental College, Boston, Mass.

and

L. ARTHUR PLATTS, M. S., D. D. S.

Professor Dental Anatomy

Chicago College Dental Surgery

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AT this time our profession would suffer greatly should the X-Ray be taken from our armamentarium. A few years hence will find us feeling exactly the same way about Ultra-violet rays. The main body of the dental profession is conservative, and has many reasons for being so, but we must progress. To be ultra—conservative, is detrimental, not only to the profession but to the laity as well. As an adjunct, and in a goodly number of lesions as a specific modality Ultra-violet rays cannot be over-estimated; and we believe as a therapeutic agent they have come to our profession to stay.”

Ultra-violet for the Dentist

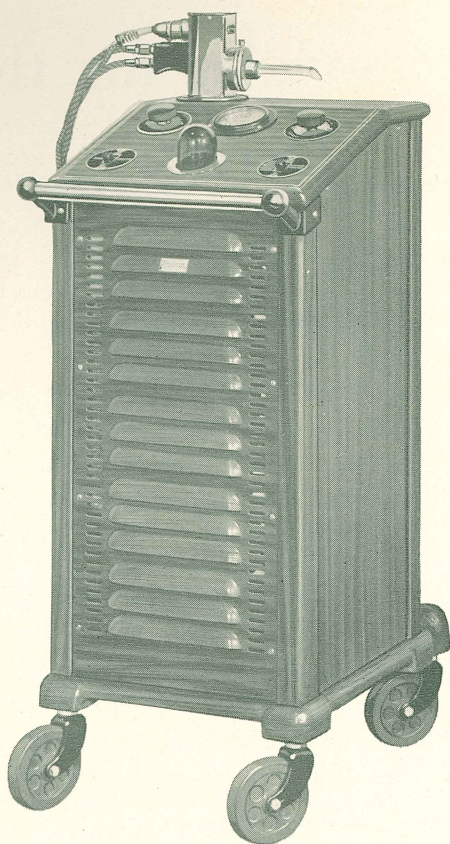
Ultra-violet Light is by no means a recent discovery. Light as a therapeutic agent has been used for many centuries, but within the last twenty years much research has been carried on to determine the specific action of different light rays.

It is now known that the invisible Infra-Red rays will penetrate deeply into the tissues of the body and produce a hyperemia; that the visible red rays are stimulative; that the indigo, blue and violet rays are sedative; that the long Ultra-violet rays are metabolic; that the short Ultra-violet rays are bactericidal and that the X-Rays and Gamma rays are destructive.

Ultra-violet rays are nature's great bactericidal agents. It is these rays lying between the visible violet and the X-Ray zone that keep the air and water pure, and doubtless prevent mankind from being overwhelmed by countless numbers of bacteria.

But Ultra-violet is more than this—it is a regenerative bactericide. Medical Science is familiar with several very powerful germicides, but the usefulness of these agencies ends with the death of the germ. Ultra-violet light does more than destroy the invading organism. The benign inflammatory process which follows its use not only assists in quickly clearing up an infection, but it also imparts tone and vigor to the tissues under treatment.

It is this combination, or dual action, characteristic of Ultra-violet light that explains to some extent its peculiarly regenerative action in pyorrhea and similar mouth conditions.



This model contains its own water-circulating system, is independent of an outside source of water supply and can therefore be moved from one place to another without regard to water connections.

The Unit shown is finished in mahogany with black trimming. Can be furnished also in gray or special finishes.

L. W. 505
for Alternating Current

L. W. 205
for Direct Current

The action of Ultra-violet in Pyorrhea

The beneficial therapeutic effect of Ultra-violet in pyorrhea is not due entirely to the direct bactericidal action of these rays but also to an increased bactericidal property of the blood itself as well as increased lymphocytosis in the part, together with stimulation of cicatrization.

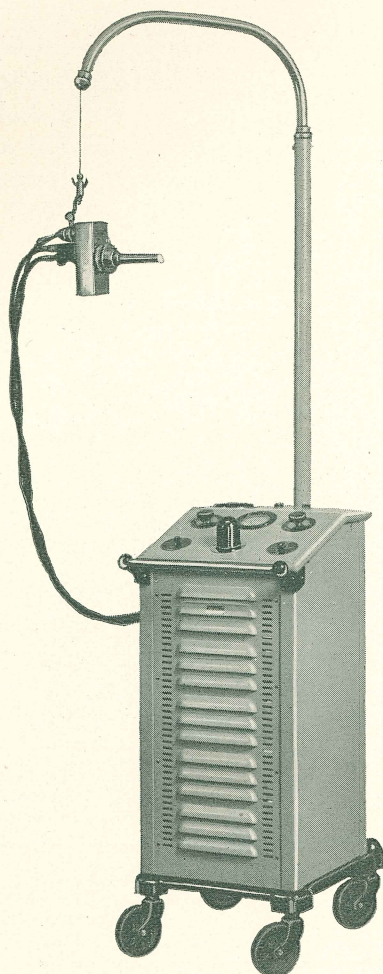
The benign, non infective inflammation produced in the tissues treated has a profound bactericidal effect extending much deeper than the direct bactericidal effect of the Ultra-violet. The direct application of Ultra-violet kills bacteria in a few **seconds**; the indirect effect of Ultra-violet extends deeply into the tissues and produces its effects in a few **hours**.

In contra-distinction to the Air-Cooled Mercury Arc Lamp, which is adapted particularly to radiating large surfaces of the body at one exposure, the Water-Cooled Lamp is used when it is desired to treat any of the body orifices or localized areas. The Water-Cooled lamp, as used in dentistry, generates a large percentage of short bactericidal rays while the Air-Cooled burner generates a large percentage of long, metabolic rays.

Ultra-violet is not Violet Ray

In order to obtain the full benefit of the combined bactericidal and regenerative action, it is necessary to use genuine Ultra-violet light. The so-called Violet Ray, which is being advertised extensively as a cure for almost every ailment, should not be confounded with the Ultra-violet ray. The Violet Ray is really not a ray at all, but simply a high frequency discharge in the form of sparks administered to the body through a glass vacuum electrode. The action of the Violet Ray or high frequency discharge produces a slight hyperemia on the body. Ultra-violet rays cannot be generated in a glass vacuum electrode. In fact, Ultra-violet rays will not pass through even the thinnest piece of glass.

The mercury vapor arc in quartz is the only source of Ultra-violet radiation available for dentistry.



Burdick Self-Contained Mobile Unit Suspension Model

The most complete and most convenient model ever offered to the dental profession. The same specifications as the unit shown on page 4 except for the addition of the support for the lamp, which removes all strain from the hand and wrist of the operator. The finish shown above is gray.

L. W. 510
for Alternating Current

L. W. 210
for Direct Current

The New Type Burdick Lamp

The dentist makes two major requirements in selecting his equipment for Ultra-violet therapy. The Ultra-violet generator must deliver a high intensity of the short germicidal wave lengths so as to assure positive results in brief periods of treatments. It must be a true precision instrument—with a constant efficiency so that the dentist can gauge dosage with perfect accuracy, and predict with confidence the reactions to be secured. To meet these two requirements perfectly the new Burdick Dental Units were designed and built.

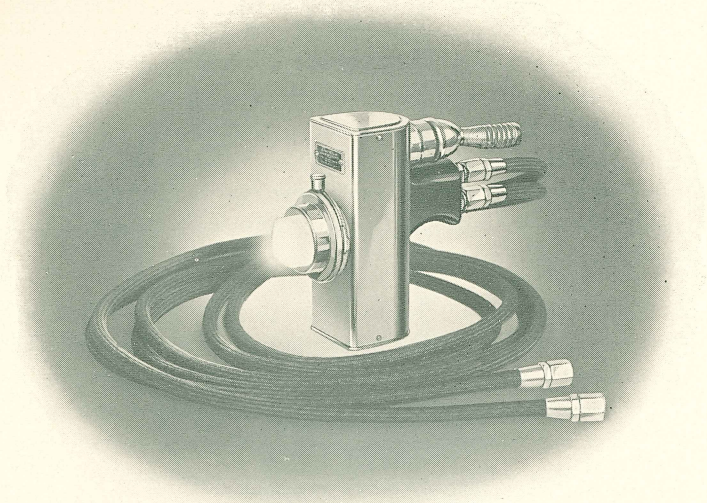
Many mercury arc lamps cause disappointment because the water-cooling stream passes between the faces of the quartz window, depositing impurities upon the quartz in an ever-thickening screen. This film absorbs more and more of the Ultra-violet energy. Day by day the intensity of radiation delivered to the area treated becomes less, until the time of treatment must be tripled and quadrupled to secure results. Under such a handicap scientific work is absolutely impossible.

In all Burdick Water-Cooled Units this great difficulty has been absolutely eliminated. Years of experiment by the Research Department resulted in the perfecting of the Ever-Clear Quartz Window, an exclusive and patented feature that sets Water-cooled Ultra-violet therapy upon a high plane of scientific precision.

The Ever-Clear Quartz Window

By this epoch-making achievement, the quartz window is cooled by a stream of water that passes around its circumference instead of across its face. It can never become clouded or discolored, no matter how impure the water stream may be.

This means that all of the Ultra-violet energy generated by your Uviarc burner is delivered to the area treated—not only on the day your lamp is delivered but after thousands



The New Burdick Water-Cooled Casing

(Equipped with Ever-Clear Quartz Window)

Rigid tests recently completed in the laboratories of one of our great universities show that the Ever-Clear Quartz Window results in an increase in efficiency of 45% over new casings of other types and an increase of more than 600% over casings of other types that have been in ordinary use for one month.

No other invention has approached the vital significance of the Ever-Clear Window in bringing Water-Cooled Ultra-violet therapy to a plane of strict scientific precision. This window alone makes possible accurate measurement of dosage and exact technique.

The Water-Lense filters out the Infra-red rays so that the window remains cool even after prolonged series of treatments.

of hours' use. You work with the maximum intensity of the effective wave lengths—maintained permanently at the peak.

The New Water Lense

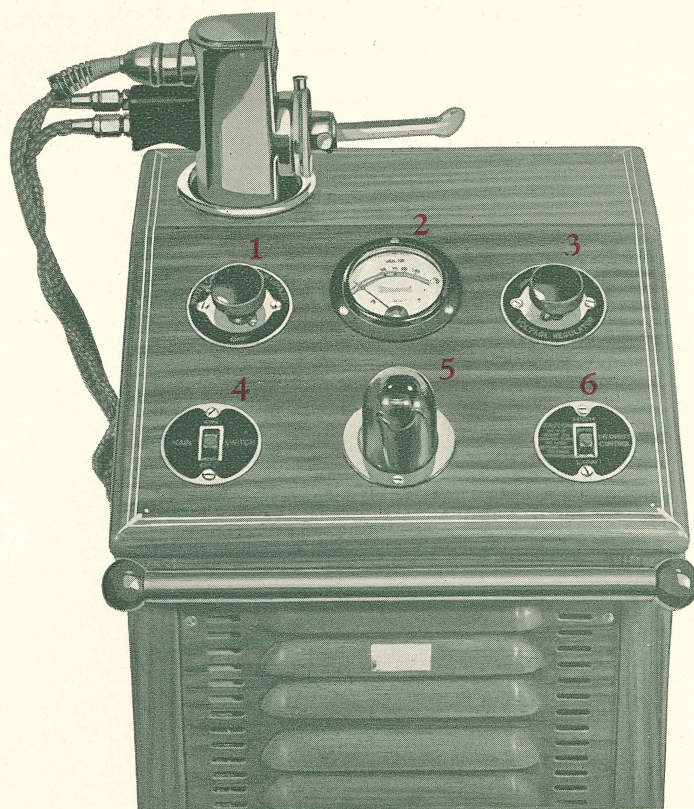
All of the heat rays generated by the mercury arc are carefully screened out of the radiant energy by the new water lense in the Ever-Clear Window.

Within the quartz there is a permanently sealed cell partially filled with triple-distilled water. The water filters out all the heat rays and transmits all the Ultra-violet. Thus the window is ever-cool as well as ever-clear. You work with a cooler ray—a shorter ray—a ray of greater intensity.

The new Burdick Dental Units eliminate all the defects of previous Water-Cooled lamps and makes available in dentistry the same great therapeutic agency that has so long been considered a specific for many conditions in the medical field.

The lamps are not only productive of remarkable results in many familiar conditions, but they are extremely convenient in use. All of the more delicate parts of the lamps are fully and carefully protected, thus eliminating the danger of breakages.





Control Board

New Burdick Self-Contained
Dental Unit
(Water Cooled)

1. Selective Switch
2. Voltmeter
3. Voltage Regulator
4. Main Switch
5. Water-Flow Indicator
6. Intensity Switch

These same voltage controls are used also on the Faucet Type Dental Units.

Measurement and Control of Dosage

Almost from the beginning of mercury lamp manufacture the Burdick engineers realized the necessity for a system of measurement and control of voltage in order to properly measure and regulate the output of Ultra-violet rays, thereby, permitting the operator to control dosage accurately.

Voltage varies. Satisfactory results in Ultra-violet therapy depend upon a precise technique—a precise technique depends upon the adequacy of the means employed for measuring and controlling the electrical energy.

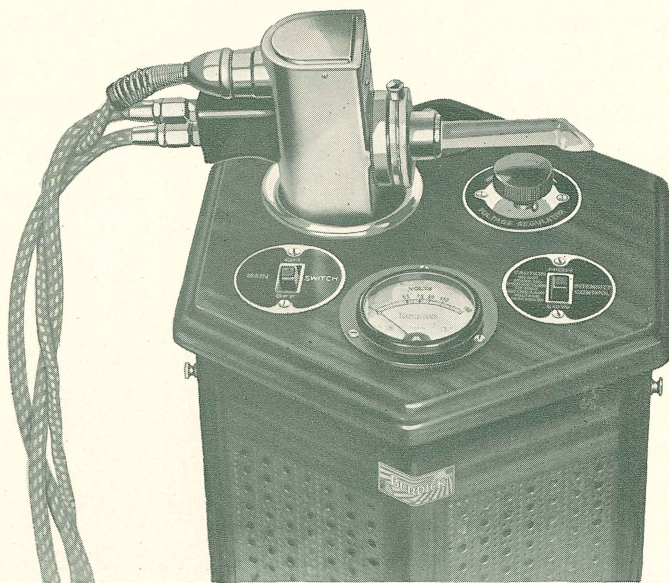
Burdick Ultra-violet equipment is therefore supplied with a volt-meter which will instantly detect any fluctuation in the line voltage, and with a Voltage Regulator so that any fluctuation may be quickly corrected.

General Considerations for the Use of Ultra-violet Rays in the Mouth

Generally speaking, in the application of Ultra-violet energy in Dentistry with the new type Burdick Water-Cooled Lamp, exposures range from a minimum of 10 to 20 seconds, and seldom exceed one minute at the first treatment. The location, the nature and the extent of the lesion determine largely the exposure time.

When the treatments are prolonged over a considerable period, as in alveolar abscesses or pyorrhea, and the treatments given every other day or twice a week, the exposure time is commonly increased 5-10 seconds at each treatment.

It should be borne in mind that by careless or improper use of Ultra-violet rays, a patient may be immunized to the action of the rays. Hence, in the beginning, it is better to underexpose rather than to over-expose. Over exposures will usually be avoided in all cases only after the operator becomes familiar with his apparatus.



The Control Board

New Burdick Faucet Type Dental Unit

The Burdick Dental Units are compact, convenient, and easy to operate. The control board has a receptor socket to hold the Water-cooled casing. When the lamp is plugged in and the main switch is turned on the voltmeter indicates the supply voltage. Tilt the Water-cooled casing to complete the electric arc. The voltmeter then returns almost to zero, but moves back to operating voltage (55 volts is recommended) within a very few minutes. The lamp is then ready for treatment. Voltage is kept at the desired height by means of the voltage regulator. The operation of the controls is simplicity itself.

The Degree of Reaction

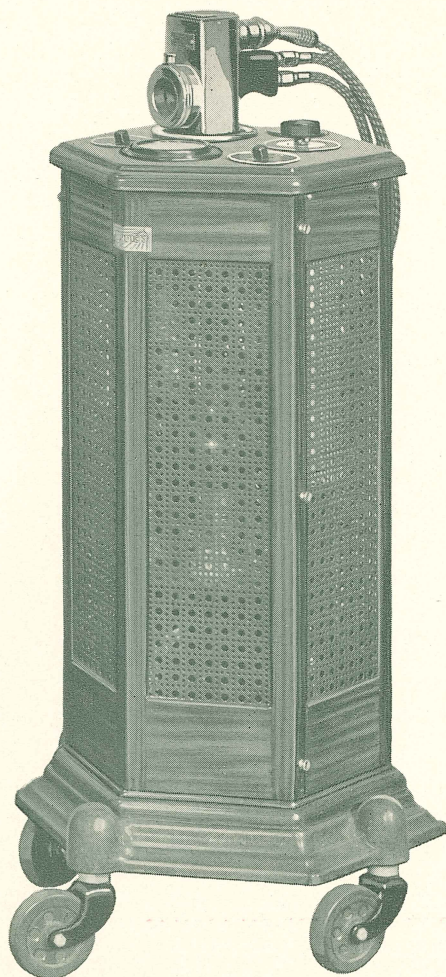
The degree of reaction to Ultra-violet Rays in the mouth may be classified as follows:

1. A Stimulative erythema which results from an exposure just sufficient to produce a faint flush of the area a few hours after treatment. This reaction will give little or no discomfort to the patient. In fact it is frequently not felt at all.
2. A Regenerative erythema which follows a slightly longer exposure and which is characterized by a more marked hyperemia but without the actual blistering, swelling, and oedema which follow an over exposure. This is the reaction usually desired in the mouth, and it follows the maximum dosage which can be tolerated **without** causing an over exposure reaction. It will cause a sensation of warmth or prickling, very slight or more noticeable depending upon the time of exposure.
3. The Desquamative or over exposure reaction follows when the exposure to the rays is lengthened beyond the time necessary to produce the regenerative reaction. The usual complaint from the patient will be a slight blister or sore spot at the point of application some hours after exposure.

An over-exposure reaction is revealed by the presence of oedema, swelling and hyperemia of the submucous tissue at and surrounding the site of application. A broken down vesicle will often be present.

Treatment of Over-exposures

In the treatment of over-exposure reactions nothing is usually indicated except the swabbing of the oral cavity with a mild antiseptic solution. A two percent solution of Mercurio-chrome or something similar is satisfactory. The patient can also be instructed to rinse out the mouth frequently with normal salt solution or a solution of bicarbonate of soda, one quarter teaspoonful to one-half glass of warm water. The use of Iodine in these conditions seems to be contra-indicated.



**The Burdick Faucet Type Dental Unit
Receptor Model**

L. W. 530
for Alternating Current

L. W. 230
for Direct Current

Over-exposure following application of Ultra-violet in the molar region will sometimes cause muscular splinting or pseudo-trismus. This condition need cause no alarm because it will disappear in a few hours, no treatment being indicated except that above suggested.

In cases of non-reaction following an exposure the operator has to consider two things—first, whether or not the lesion he is treating will respond to Ultra-violet Rays. Specific lesions will not respond; second, whether the trouble may be caused by incorrect voltage, amperage, or in the case of old style lamps, by possible deposit on the quartz window; thus preventing passage of the Ultra-violet Rays.

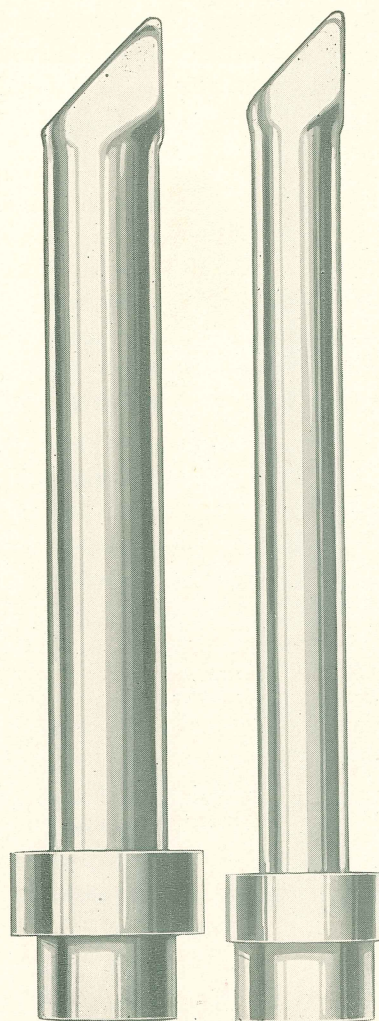
Regardless of the extent of the reaction to Ultra-violet Rays, the ultimate outcome is always favorable, and the only ill effects of over-exposure, even a severe over-exposure, are the tenderness of the area and the discomfort of the patient.

Ultra-violet will not Burn

A "burn" from Ultra-violet Rays is in no way comparable to the destructive burn of radium and X-ray, since the latter may be permanent and the results fatal. The most severe "burn" that can be produced with Ultra-violet results only in a temporary reaction and unfailingly clears up without the slightest formation of scar tissue or disfiguration.

New Burdick Dental Applicators

Just as the Burdick Ever Clear Dental Water Cooled Lamp is a new departure in Ultra-violet ray production, delivering the largest percentage of Ultra-violet energy of constant intensity for uniform technic, so these especially designed Burdick Dental applicators are an entirely new departure for the application of Ultra-violet rays in dental therapy.



New Type Burdick Dental Applicators

A. W. 25
6 inches long
 $\frac{5}{8}$ " diameter

A. W. 26
6 inches long
 $\frac{1}{2}$ " diameter

The Prismatic heads of applicators A. W. 25 and A. W. 26, deliver the Ultra-violet rays at right angles to the surface under treatment in a manner impossible to accomplish with any other type of applicator.

The volume of Ultra-violet ray transmission is in direct proportion to the diameter of the applicator; hence, applicator A. W. 25 has a larger transmission capacity than A. W. 26, and should be used when intensity of application is desired, and when the use of a large applicator is possible.

Applicator A. W. 26 is designed especially for use in the treatment of children and in the treatment of remote portions of the mouth in adults not easily accessible with applicator A. W. 25 or A. W. 27.

These new dental applicators conduct Ultra-violet energy with the highest efficiency to the area under treatment, with the least possible leakage of the rays from the lateral walls of the applicator.

The applicators are so shaped that the rays may be applied with the greatest convenience to any portion of the mouth, or any group of teeth for the relief of pain or inflammation; for combatting infections and for healing lacerated gums and processes.

A New Principle of Design

These new Burdick Dental applicators are designed on an entirely new principle, based on exhaustive research that has been carried on for more than a year. They are constructed of hollow fused quartz tubes which are filled with triple-distilled water, the air being exhausted at the same time, and sealed off in a manner similar to any other vacuum device.

The new Metal Retractors (illustrated upon the following page) afford a simple and convenient method of shielding the lips, the tongue or the gums from exposure during a series of exposures.

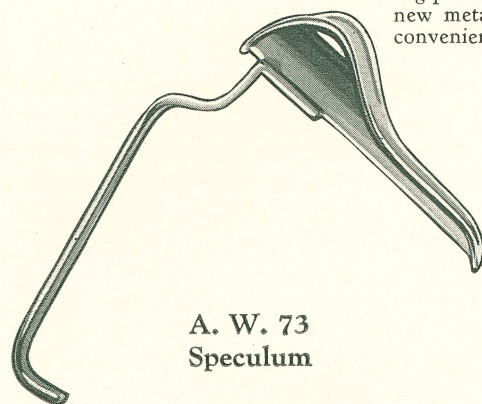
They are light in weight and carefully shaped so as to serve their purpose admirably. The dentist will not always find it necessary to use them. But when four or five teeth are treated, both lingually and labially, it is wise to protect your patient from irritation of other areas through leakage of Ultra-violet.

Sterilization of Applicators

The type of construction of these applicators renders them easy to cleanse and sterilize, leaving no rough surfaces for the accumulation of foreign matter.

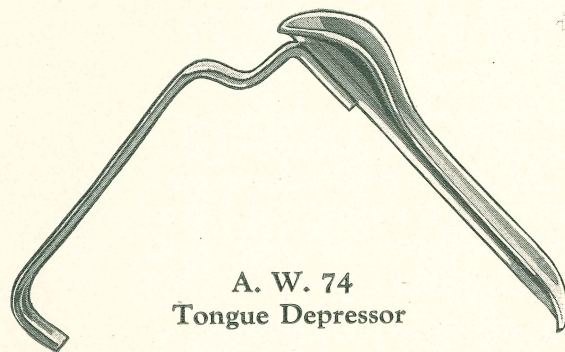
The Ultra-violet rays will keep the applicators practically sterile. However, the use of a proper solution of Chlor-

There is always a slight leakage of Ultra-violet from the sides of the quartz applicators. To prevent irritation of the lips or gums during prolonged treatments, this new metal Speculum is both convenient and effective.



A. W. 73
Speculum

The New Dental Retractors



A. W. 74
Tongue Depressor

Especially in pyorrhea, where five or six teeth may be treated both lingually and labially at a single sitting, this metal Tongue Depressor will protect your patient's tongue from exposure to Ultra-violet leakage.

zine, or Sharp & Dohme Hexylresorcinol Solution S. T. 37 is recommended, but in no case should applicators be placed in a sterilizer with other dental instruments.

Operative Technic

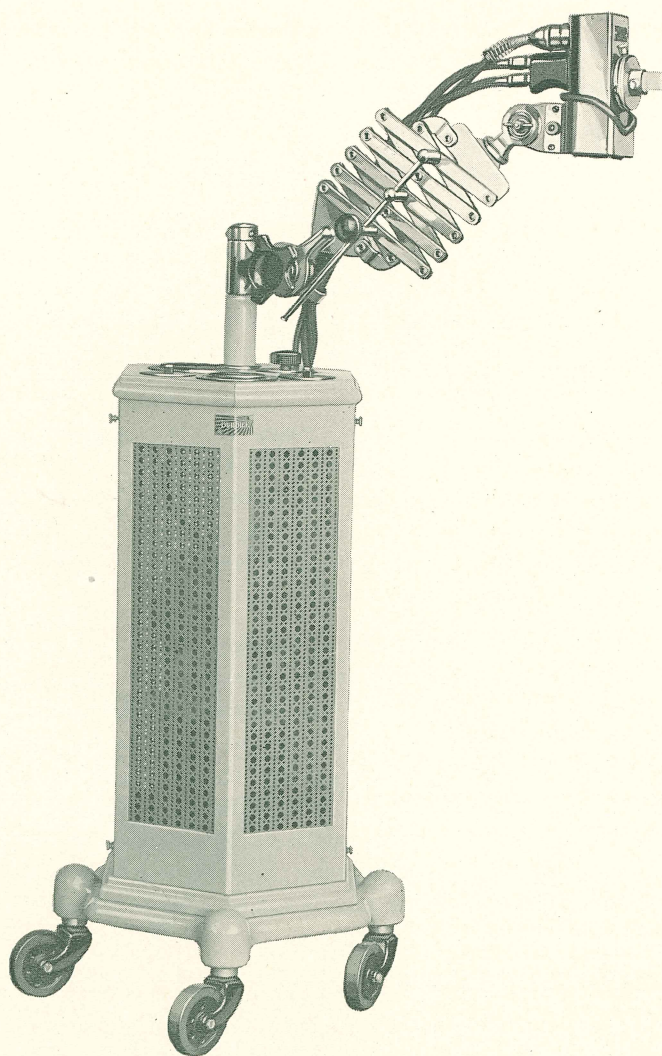
Ultra-violet Rays should not be considered a cure-all, but rather an adjunct to the usual correct or accepted treatment of the lesion. The most important procedure in any treatment is proper diagnosis. The previous history of the patient is of great value, and one of the most important factors to be considered.

Many lesions of the oral cavity are the sequelae of systemic conditions or specific treatments and it would be folly to try to eradicate them by Ultra-violet radiation. In many such cases, however, temporary relief of a decided character may often be brought about with intelligent, consistent Ultra-violet applications.

No attempt has been made to include instructions for the use of specula, tongue depressors, retractors, or appliances of that nature. The actual manipulation of Ultra-violet applicators in the mouth will vary to the extent of the choice of the operator as how best to work in the field of operation. Blood diffuses Ultra-violet rays. Therefore, in using applicators in the mouth apply sufficient pressure to the tissue with the applicator to dehematize the part. The use of drugs to dehematize is not necessary or desirable.

Use Large Applicators

Use as large an applicator in the mouth as is possible for the area being treated, and direct the Ultra-violet rays perpendicular to the part under treatment. Large applicators can generally be centered over any area desired as well as smaller applicators, so that any specific point may be reached. At the same time, rays which might be considered excessive for covering only a small point will most likely be a benefit to the surrounding tissues. For reaching



The Burdick Faucet Type

Extension Arm Model

L. W. 532
for Alternating Current

L. W. 232
for Direct Current

parts adjacent to and distal to the molar regions, a smaller applicator is usually better and more comfortable for the patient.

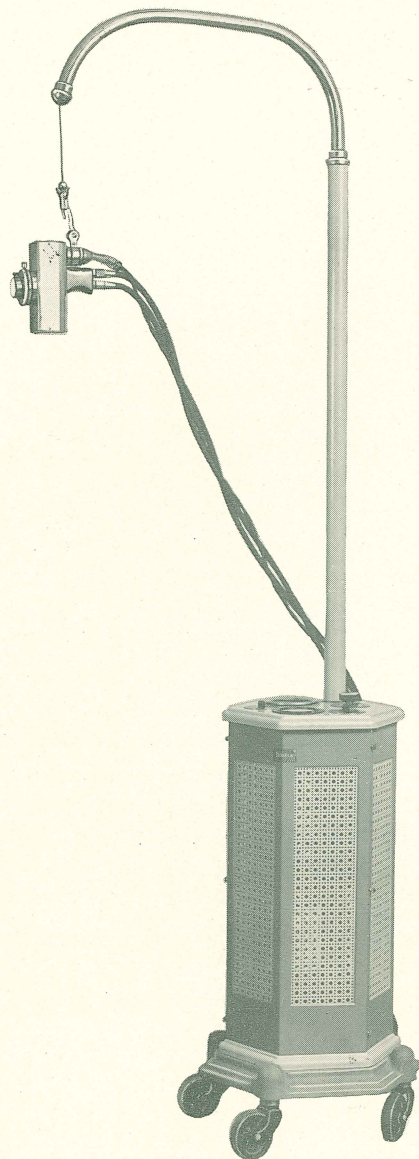
Abscesses

In the treatment of abscesses in dentistry, Ultra-violet rays play a great part, since they are not only a sterilizing agent but in addition one of the most helpful factors in the regeneration of bone processes in all forms of alveolar abscesses. In the treatment of acute abscesses, the first result following exposure is often the relief of pain. Incipient abscesses may often be aborted by the use of Ultra-violet rays.

At each sitting during the usual treatment, such as establishing drainage, cleaning out root canals, dressing, filling root canals, etc., Ultra-violet should be applied directly over the abscess cavity, the extent of which should, of course, be determined by X-Ray examination. The site of the abscess will determine somewhat the size and shape of the applicator. Use sufficient pressure to dehematize, more pressure usually being required in the bicuspid and molar regions because of the increased density of the tissue. Apply Ultra-violet to the abscess area thirty seconds for the first exposure, both on the lingual and labial sides, increasing this exposure by fifteen seconds, both lingual and labial, at each subsequent treatment. The duration of the treatment for abscesses is as a rule from three to six sittings every other day or twice a week. The results may be determined by X-Ray checking, bone regeneration being expected in favorable cases after a lapse of two to six months. The new formation of bone will appear at the edge of the abscess cavity as a line irregular in outline converging towards the center.

Antrum Infections

Used as an adjunct or as a post-operative agent in acute cases and after each irrigation, especially in chronic cases, Ultra-violet rays always give some relief from pain and in



The Burdick Faucet Type Dental Unit Suspension Model

The same unit as the one shown on page 14, except for the addition of the overhead supporting arm, from which the lamp is suspended and counter-balanced so that it may be held in position with no strain on the hand or wrist of the operator. The finish here is gray.

L. W. 531
for Alternating Current

L. W. 231
for Direct Current

most cases will shorten the duration of the infection. Apply to buccal and lingual walls of the maxillary antrum with a good sized applicator, beginning with an exposure of forty seconds and increasing fifteen seconds at each subsequent treatment.

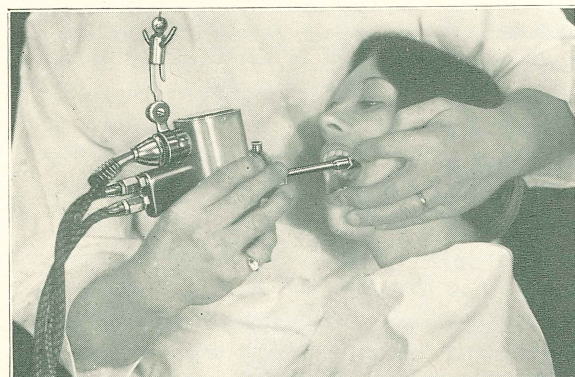
Exodontia

Ultra-violet following extraction gives uniformly splendid results, both in preventing post-operative complications and in the relief of pain. After thorough washing of the socket and after the hemorrhage is controlled, apply the rays directly over the socket bringing the applicator just to the top of the socket. Do not attempt to apply pressure. Do not attempt to enter the socket with the applicator. Remember blood will diffuse the rays, and best results will, therefore, be obtained when used in the presence of as little blood as possible. The exposure should be 40 to 60 seconds for the first treatment and, if necessary to give a second treatment, the day following the removal of the tooth 15 seconds longer. After the first exposure, the socket may be packed, if desired, with a suitable surgical dressing. If subsequent exposures are necessary, any dressing remaining should be removed. This same treatment will apply in the case of a single tooth or several, if removed at one sitting; but in the latter case it is usually better to move the applicator about so that the time of exposure of the whole area will be about sixty seconds, rather than attempting to expose each socket, unless the teeth removed are widely separated. After the removal of impacted third molars, it is often of benefit in addition to the above procedure to expose the external mandibular region one-half minute removing the applicator from the lamp and confining the radiation to as small an area as possible along the ramus of the mandible.

Gingivitis

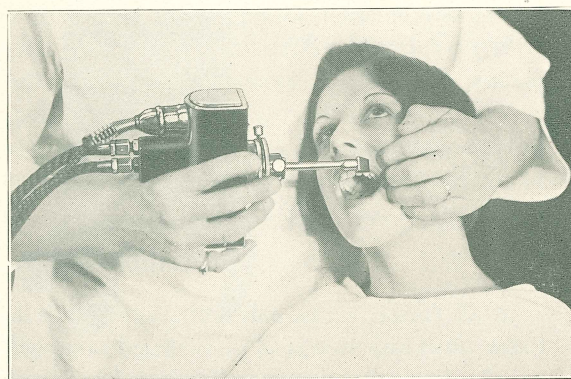
In all forms, acute, sub-acute, chronic or hypertrophic, Ultra-violet radiation is of pronounced value with the results usually promptly apparent. Single point treatments may be

Illustrating the labial irradiation of the lower incisors apically using the straight quartz applicator with rounded terminal which carries the rays direct to these areas at right angles.



Showing the lingual irradiation of the upper left bicuspid apically, through the prismatic quartz applicator which directs the Ultra-violet rays against the area at right angles.

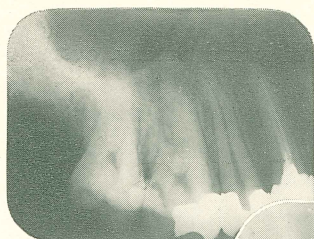
The Prismatic Applicator shown is A. W. 26, preparatory for insertion in mouth for labial radiation of upper left cuspid and bicuspid.



made along the gingival margin, lingually and labially, over the area most affected, holding the applicator in direct contact with the tissue with sufficient pressure to dehematize. In addition to this local treatment, it is advisable in more extensive cases to use a thorough radiation of the entire mouth, which, may be carried out as follows: Use a good sized quartz applicator not less than $\frac{3}{8}$ inches diameter at the tip. Start with the upper incisors and work back towards the molar region radiating four teeth at a time, with an exposure at first of thirty seconds, holding the applicator so that the rays will reach the area perpendicularly and radiating the four tooth area rather than any one particular tooth. Proceed in the same manner on the other side of the upper jaw and then on both sides of the lower jaw. This enables the operator to save time and this 8 exposure full mouth treatment has proven very effective in conditions where the whole mouth is more or less involved. After the first treatment the general rule may be followed of increasing the exposure fifteen seconds at each subsequent treatment. Increased tonicity usually appears promptly sometimes after the first treatment, with a decrease in the hyper-sensitiveness usually accompanying this condition.

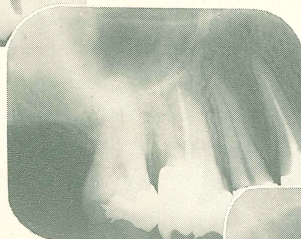
Neuralgia—Trifacial

With a good sized applicator, begin at the median line and work to the third molar on the side involved, making the application of the rays in a line with the apices of the teeth. Use enough pressure to dehematize and treat both lingually and labially with an exposure of thirty seconds over each tooth. Remove the applicator from the lamp and radiate the side of the face involved direct from the lamp for 30 seconds at a distance which allows the rays to spread over the area comprising the temporal, superior and inferior dental branches of the fifth nerve. One treatment will often bring relief. If necessary, treatment can be repeated the next day increasing the intra-oral exposure to forty-five seconds.



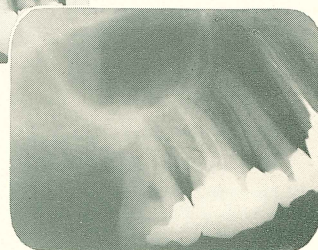
September, 1921

Case I—Upper left first molar—large cavity in the disto-occlusal portion of the tooth. Pulp chamber was exposed, and canals infected; pain and swelling over the tooth. X-ray showed distinct rarefied area over root ends. Case presented in September, 1921. First picture at that date.



July, 1927

Time of exposure increased 15 seconds at each treatment. Formo-cresol sealed in pulp chamber and root canals three times in two weeks. Canals then filled and gold inlay placed in the cavity later.



January, 1928

Treatment: formo-cresol in the cavity. Ultra-violet radiation applied over the root-end area both buccally and lingually, directly to mucous membrane, with slight pressure for 30 seconds. Treated every other day, 2 weeks.



February, 1924

Case II—Patient male, forty years of age. Upper left lateral incisor in much the same condition as that described above. X-ray reveals distinct rarefied area around the root-end. The tooth was cleaned and treated with Ultra-violet radiation both lingually and labially through a quartz applicator. Method and dosage as in preceding case.



October, 1925

Treatment continued according to routine described in Case I with marked improvement as shown in the photographs. The first picture shows the condition before treatment in 1924.



January, 1928

The affected areas in both cases show practically complete regeneration of the tissues. The teeth are giving good service and are perfectly comfortable. Treatment was completely satisfactory to the patient.

Post-operative Infection

Following all surgery in the mouth, a thorough radiation of the parts involved for 40 seconds with a $\frac{5}{8}$ inch applicator, as a routine procedure, will do much to eliminate post-operative infection. Inasmuch as Ultra-violet rays are intensely bactericidal, their action primarily is a good defense against infection.

Post-operative Pain

There is no better illustration of the analgesic action of Ultra-violet energy than is shown in the prevention and relief of post-operative pain following surgery in the mouth. Used as suggested under Exodontia and following excision of gum margins and gum tissue, as practised by some operators in pyorrhea, and in similar conditions, patients will complain of less post-operative pain and complications than with any other prophylactic measure. The exposure should be 45-60 seconds, with the applicator as close to the tissue as possible without making actual contact.

Pseudo—Ankylosis

This condition will be less troublesome or entirely absent following the extraction of impacted third molars, if Ultra-violet is used immediately following the operation, both intra-orally and extra-orally as outlined under Exodontia.

Pyorrhea

The first time the patient presents, the entire mouth should be given a thorough general irradiation using lingually and labially the 8 exposure full mouth method outlined above under Gingivitis with slight pressure of the applicator, directing the rays over the apices of the teeth and along the gingival margins. The time of the first exposure being 30-40 seconds depending upon the severity of the condition. At the next sitting, clean thoroughly and scale as many teeth as possible for that sitting, going as deeply into the pockets as possible **once only**. Too much instrumentation is undesirable with Ultra-violet treatment

After that is done, radiate the entire mouth, as before, using an exposure 10-15 seconds longer. Repeat this procedure every other day or twice a week. Formation of pus will usually cease following the second treatment.

Soon thereafter an improved condition of the tissues as a whole will be noticeable. The severity of the case determines the number of treatments. It is recommended that the exposure time at each treatment be increased by ten or fifteen seconds until the exposure reaches a maximum of 2-2½ minutes. The 8 exposure full mouth method will prove more satisfactory in pyorrhea than single point application over each tooth. It is taken for granted that before attempting to treat pyorrhea, all prosthetic work, fillings, occlusion, etc., will be checked up and corrected if necessary. Following Ultra-violet radiation, hard structures usually show more tendency to regenerate in pyorrhea than do the soft tissues, but as a whole the clinical findings even in extreme cases will reveal a tightening of loose teeth and the cessation of pus formation. In the regeneration of the gingival gum tissues, the interdental papillae will show more tendency to push their way to normal position than the tissues around the necks of the teeth at the cemento-enamel junction.

Pulpitis

The benefits from Ultra-violet treatments here seem to be dependent upon the cause of the condition. If the tooth affected is thoroughly radiated for 30-40 seconds, moving the applicator slowly from the apex of the tooth towards the crown, a counter-irritant effect is produced which in most cases helps the condition and in some seems to effect a cure.

Stomatitis

In all forms of stomatitis, traumatic, systemic or infectious, the results from Ultra-violet treatments are very favorable, less so in conditions associated with severe systemic complications, such as diabetes, syphilis, etc. In

infectious varieties from a slight gingivitis to a severe ulcerative type, Ultra-violet is a **specific** with little or no medication used in connection with it. The results in Vincent's Stomatitis and in Vincent's Angina are most striking. The general method of treatment for all forms of Stomatitis is to irradiate the mouth thoroughly, all areas of both upper and lower jaws by the 8 exposure full mouth method, beginning with an exposure of 30 seconds on the lingual side and 30 seconds on the labial or buccal, increasing the exposure time as usual 10-15 seconds at each treatment. The treatment should occur every other day, or in very severe cases every day for the first few treatments. If the condition of the mouth prevents sufficient pressure of the applicator to dehematize, use the applicator in as close contact with the tissues under treatment as possible. In some cases where there is a moth-eaten appearance of the interdental papillae, the applicator should be used along the gingival margin over each tooth and in each inter-proximal space, starting with an exposure of 30 seconds. In general, however, it is best to follow with this more localized treatment and use in the beginning the more general irradiation by means of the 8 exposure full mouth treatment outlined above.

Miscellaneous

In teeth sensitive to percussion, in "toothache" (using the term generally) in sensitive gums, soft spongy gums, hyper-sensitive dentin, cellulitis, bursitis and similar conditions not readily classified otherwise, Ultra-violet rays often produce very striking and pleasing results. Radiate the area involved or the tooth itself lingually and labially from the occlusal surface to the apex 30-40 seconds, increasing the exposure time 15 seconds at subsequent treatments. This will often give so much relief to the patient that operative correction of the condition can be postponed indefinitely.

In Conclusion

The suggestions for technic above are not offered as final but as working methods that have been used successfully in a great number of cases. Ultra-violet radiation in dentistry is progressing fast. New methods are constantly being developed and applied much to the benefit of patients who appreciate treatments that are of a pleasant nature and a relief from the dreaded sessions usually encountered in the dentist's chair.

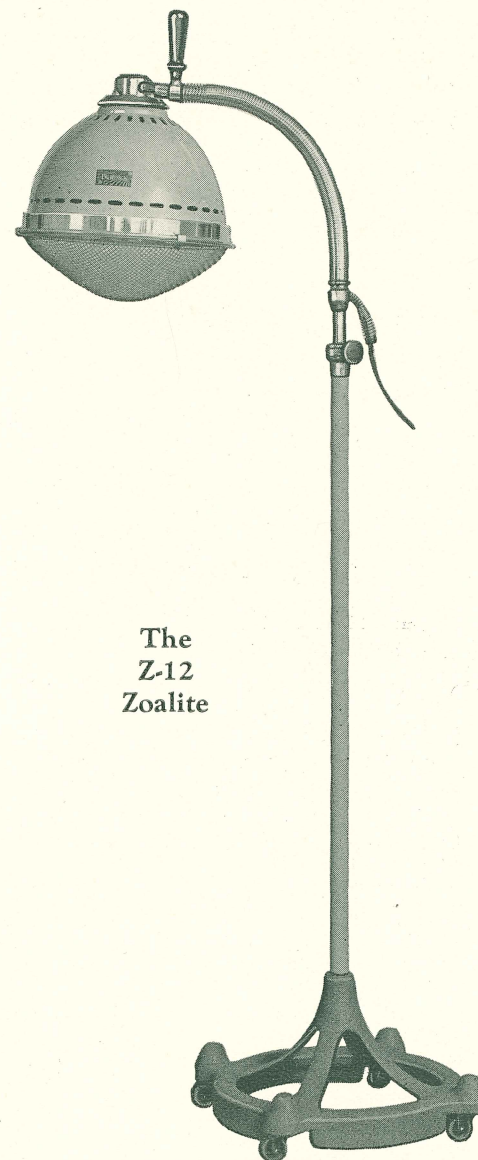
Further particulars relative to Ultra-violet and its application will be supplied gladly and without obligation.

THE BURDICK CORPORATION
Dental Division,
MILTON, WISCONSIN

The Zoalite

A Source of Infra-red Rays Conversive Heat

The great therapeutic value of the Zoalite lies in its splendid efficiency as a generator of Infra-red radiation.



The
Z-12
Zoalite

The most obvious effect of treatment with the Zoalite is the production of conversive heat and the marked hyperaemia that results therefrom.

Hyperaemia produced by the Zoalite is in itself analgesic, thus lessening spasm due to pain in the area treated. It is also bactericidal, in that the greater blood supply may be expected to result in increased oxidation of the blood and a more vigorous phagocytosis.

For routine treatment, place the lamp at such a distance that a comfortable sensation of heat and a gradual reddening of the skin are produced.

THE experience of the Burdick Corporation, extending over many years, has been used to advantage in the design and manufacture of the new Burdick Dental Units.

Burdick Ultra-violet Equipment for the dentist is designed and built according to the same high standards as the 40,000 Burdick light therapy units installed in physicians' offices and in hospitals. The Burdick Corporation stands squarely back of its products—and every claim made for them.

THE BURDICK CORPORATION

**Largest Exclusive Manufacturers of Light Therapy
Equipment in the World**

Distributors in all Principal Cities

Milton, Wisconsin

Burdick Ultra-violet Equipment

For the Dentist



*Technique compiled in collaboration
with*

FREDERICK W. LAKE, D.M.D.
TUFTS DENTAL COLLEGE, BOSTON, MASS.

and

L. ARTHUR PLATTS, M.S., D.D.S.
CHICAGO COLLEGE DENTAL SURGERY

E. F. MAHADY CO.
851-857 BOYLSTON STREET
BOSTON, MASS.

Burdick Ultra-violet Equipment

For the Dentist



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Chicago College Dental Surgery

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Milton, Wisconsin

Printed in U. S. A.

“AT this time our profession would suffer greatly should the X-Ray be taken from our armamentarium. A few years hence will find us feeling exactly the same way about Ultra-violet rays. The main body of the dental profession is conservative, and has many reasons for being so, but we must progress. To be ultra-conservative, is detrimental, not only to the profession but to the laity as well. As an adjunct, and in a goodly number of lesions as a specific modality Ultra-violet rays cannot be overestimated; and we believe as a therapeutic agent they have come to our profession to stay.”

Ultra-violet for the Dentist

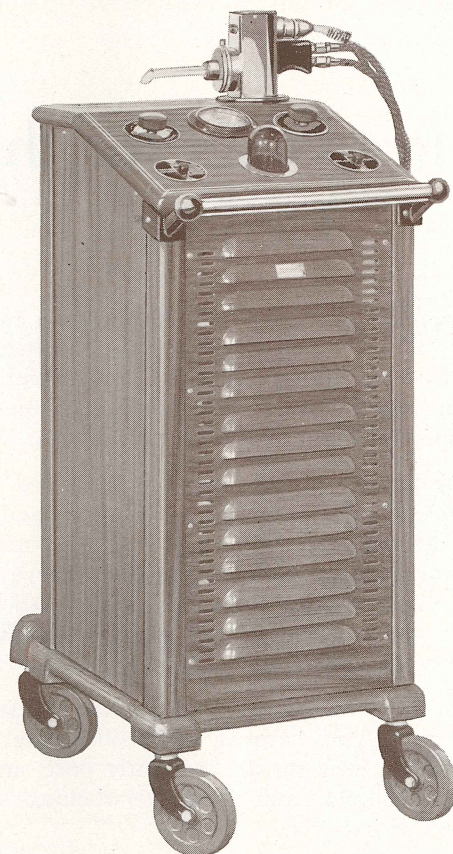
Ultra-violet light is by no means a recent discovery. Light as a therapeutic agent has been used for many centuries, but within the last twenty years much research has been carried on to determine the specific action of different light rays.

It is now known that the invisible Infra-red rays will penetrate deeply into the tissues of the body and produce a hyperemia; that the visible red rays are stimulative; that the indigo, blue and violet rays are sedative; that the long Ultra-violet rays are metabolic; that the short Ultra-violet rays are bactericidal and that the X-Rays and Gamma rays are destructive.

Ultra-violet rays are nature's great bactericidal agents. It is these rays lying between the visible violet and the X-Ray zone that keep the air and water pure, and doubtless prevent mankind from being overwhelmed by countless numbers of bacteria.

But Ultra-violet is more than this—it is a regenerative bactericide. Medical Science is familiar with several very powerful germicides, but the usefulness of these agencies ends with the death of the germ. Ultra-violet light does more than destroy the invading organism. The benign inflammatory process which follows its use not only assists in quickly clearing up an infection, but it also imparts tone and vigor to the tissues under treatment.

It is this combination, or dual action, characteristic of Ultra-violet light that explains to some extent its peculiarly regenerative action in pyorrhea and similar mouth conditions.



Burdick Self-Contained Dental Unit Receptor Model

This model contains its own water-circulating system, is independent of an outside source of water supply and can therefore be moved from one place to another without regard to water connections.

The unit shown is finished in mahogany with black trimming. Can be furnished also in gray or special finishes.

L. W. 505
for Alternating Current

L. W. 205
for Direct Current

The Action of Ultra-violet in Pyorrhea

The beneficial therapeutic effect of Ultra-violet in pyorrhea is not due entirely to the direct bactericidal action of these rays but also to an increased bactericidal property of the blood itself as well as increased lymphocytosis in the part, together with stimulation of cicatrization.

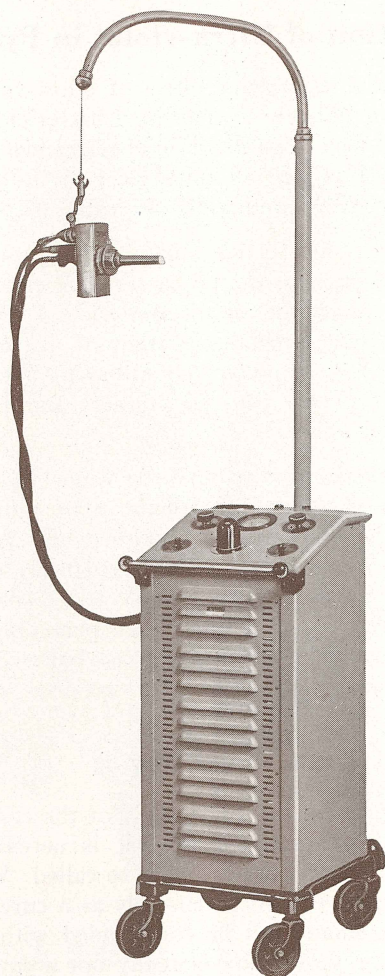
The benign, non infective inflammation produced in the tissues treated has a profound bactericidal effect extending much deeper than the direct bactericidal effect of the Ultra-violet. The direct application of Ultra-violet kills bacteria in a few *seconds*; the indirect effect of Ultra-violet extends deeply into the tissues and produces its effects in a few *hours*.

In contra-distinction to the Air-cooled Mercury Arc Lamp, which is adapted particularly to radiating large surfaces of the body at one exposure, the Water-cooled Lamp is used when it is desired to treat any of the body orifices or localized areas. The Water-cooled lamp, as used in dentistry, generates a large percentage of short bactericidal rays while the Air-cooled burner generates a large percentage of long, metabolic rays.

Ultra-violet is not Violet Ray

In order to obtain the full benefit of the combined bactericidal and regenerative action, it is necessary to use genuine Ultra-violet light. The so-called Violet Ray, which is being advertised extensively as a cure for almost every ailment, should not be confounded with the Ultra-violet ray. The Violet Ray is really not a ray at all, but simply a high frequency discharge in the form of sparks administered to the body through a glass vacuum electrode. The action of the Violet Ray or high frequency discharge produces a slight hyperemia on the body. Ultra-violet rays cannot be generated in a glass vacuum electrode. In fact, Ultra-violet rays will not pass through even the thinnest piece of glass.

The Mercury Vapor Arc in quartz is the only source of Ultra-violet radiation available for dentistry.



Burdick Self-Contained Mobile Unit Suspension Model

The most complete and most convenient model ever offered to the dental profession. The same specifications as the unit shown on page 4 except for the addition of the support for the lamp, which removes all strain from the hand and wrist of the operator. The finish shown above is gray. Can be furnished also in mahogany or special finishes.

L. W. 510
for Alternating Current

L. W. 210
for Direct Current

The New Type Burdick Lamp

The dentist makes two major requirements in selecting his equipment for Ultra-violet therapy. The Ultra-violet generator must deliver a high intensity of the short germicidal wave lengths so as to assure positive results in brief periods of treatment. It must be a true precision instrument—with a constant efficiency so that the dentist can gauge dosage with perfect accuracy, and predict with confidence the reactions to be secured. To meet these two requirements perfectly the new Burdick Dental Units were designed and built.

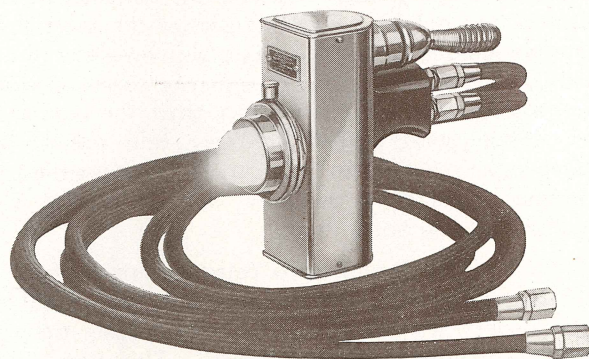
Many Mercury Arc Lamps cause disappointment because the water-cooling stream passes between the faces of the quartz window, depositing impurities upon the quartz in an ever-thickening screen. This film absorbs more and more of the Ultra-violet energy. Day by day the intensity of radiation delivered to the area treated becomes less, until the time of treatment must be tripled and quadrupled to secure results. Under such a handicap scientific work is absolutely impossible.

In all Burdick Water-cooled Units this great difficulty has been absolutely eliminated. Years of experiment by the Research Department resulted in the perfecting of the EVER-CLEAR Quartz Window, an exclusive and patented feature that sets Water-cooled Ultra-violet therapy upon a high plane of scientific precision.

The EVER-CLEAR Quartz Window

By this epoch-making achievement, the quartz window is cooled by a stream of water that passes around its circumference instead of across its face. It can never become clouded or discolored, no matter how impure the water stream may be.

This means that all of the Ultra-violet energy generated by your Uviarc burner is delivered to the area treated—not only on the day your lamp is delivered but after thousands of hours' use. You work with the maximum intensity of the effective wave lengths—maintained permanently at the peak.



The New Burdick Water-Cooled Casing

The Burdick Ever-Clear Water-cooled Casing contains the intense vertical Uviarc burner. The window of this lamp, unlike many Water-cooled lamps, cannot be contaminated by the water cooling stream with its impurities and thus always transmits the full high intensity radiation produced by the burner.

This casing is cooler than other casings because most of the Infra-red rays are screened out by a quartz lens filled with triple distilled water and vacuum sealed. This makes possible very intense treatments without discomfort.

The D-shaped casing also increases efficiency because it brings the burner very close to the area under treatment. Thus the most intense Ultra-violet treatments are made possible, in comfort, and without loss of lamp efficiency through window contamination and consequent changes of technic.

The New Water Lens

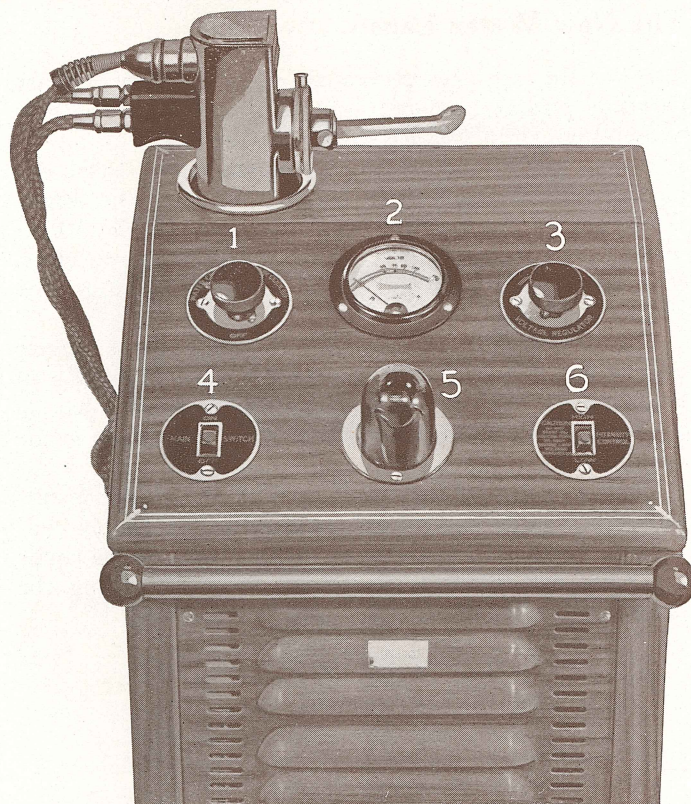
All of the heat rays generated by the Mercury Arc are carefully screened out of the radiant energy by the new Water Lens in the EVER-CLEAR Window.

Within the quartz there is a permanently sealed cell partially filled with triple-distilled water. The water filters out all the heat rays and transmits all the Ultra-violet. Thus the window is ever-cool as well as ever-clear. You work with a cooler ray—a shorter ray—a ray of greater intensity.

The new Burdick Dental Units eliminate all the defects of previous Water-cooled lamps and makes available in dentistry the same great therapeutic agency that has so long been considered a specific for many conditions in the medical field.

The lamps are not only productive of remarkable results in many familiar conditions, but they are extremely convenient in use. All of the more delicate parts of the lamps are fully and carefully protected, thus eliminating the danger of breakages.





Control Board

New Burdick Self-Contained Dental Unit

(Water-cooled)

1. Selective Switch
2. Voltmeter
3. Voltage Regulator
4. Main Switch
5. Water-flow Indicator
6. Intensity Switch

These same voltage controls are used also on the Faucet Type Dental Units.

Measurement and Control of Dosage

Almost from the beginning of Mercury Lamp manufacture the Burdick engineers realized the necessity for a system of measurement and control of voltage in order to properly measure and regulate the output of Ultra-violet rays, thereby permitting the operator to control dosage accurately.

Voltage varies. Satisfactory results in Ultra-violet therapy depend upon a precise technique—a precise technique depends upon the adequacy of the means employed for measuring and controlling the electrical energy.

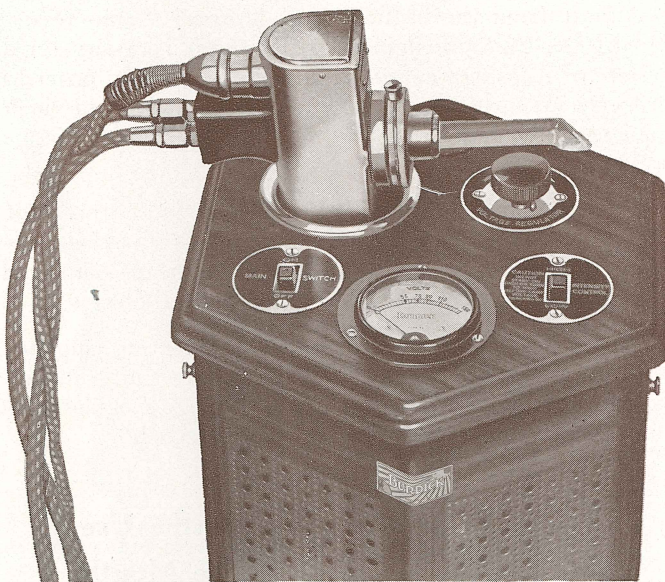
Burdick Ultra-violet equipment is therefore supplied with a Voltmeter which will instantly detect any fluctuation in the line voltage, and with a Voltage Regulator so that any fluctuation may be quickly corrected.

General Considerations for the Use of Ultra-violet Rays in the Mouth

Generally speaking, in the application of Ultra-violet energy in Dentistry with the new type Burdick Water-cooled Lamp, exposures range from a minimum of 10 to 20 seconds, and seldom exceed one minute at the first treatment. The location, the nature and the extent of the lesion determine largely the exposure time.

When the treatments are prolonged over a considerable period, as in alveolar abscesses or pyorrhea, and the treatments given every other day or twice a week, the exposure time is commonly increased 5-10 seconds at each treatment.

It should be borne in mind that by careless or improper use of Ultra-violet rays, a patient may be immunized to the action of the rays. Hence, in the beginning, it is better to under-expose rather than to over-expose. Over-exposures will usually be avoided in all cases only after the operator becomes familiar with his apparatus.



The Control Board

New Burdick Faucet Type Dental Unit

The Burdick Dental Units are compact, convenient, and easy to operate. The control board has a receptor socket to hold the Water-cooled casing. When the lamp is plugged in and the main switch is turned on the Voltmeter indicates the supply voltage. Tilt the Water-cooled casing to complete the electric arc. The Voltmeter then returns almost to zero, but moves back to operating voltage (55 volts is recommended) within a very few minutes. The lamp is then ready for treatment. Voltage is kept at the desired height by means of the Voltage Regulator. The operation of the controls is simplicity itself.

The Degree of Reaction

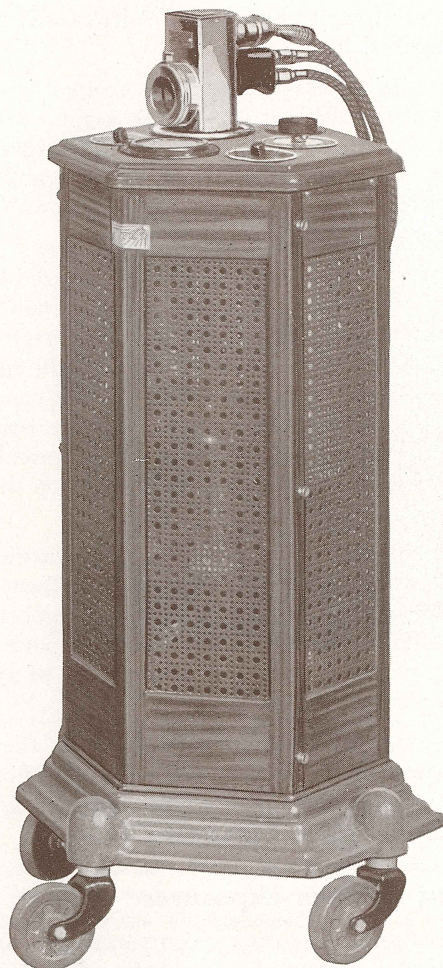
The degree of reaction to Ultra-violet rays in the mouth may be classified as follows:

1. A Stimulative erythema which results from an exposure just sufficient to produce a faint flush of the area a few hours after treatment. This reaction will give little or no discomfort to the patient. In fact it is frequently not felt at all.
2. A Regenerative erythema which follows a slightly longer exposure and which is characterized by a more marked hyperemia but without the actual blistering, swelling, and edema which follow an over-exposure. This is the reaction usually desired in the mouth, and it follows the maximum dosage which can be tolerated *without* causing an over-exposure reaction. It will cause a sensation of warmth or prickling, very slight or more noticeable depending upon the time of exposure.
3. The Desquamative or over-exposure reaction follows when the exposure to the rays is lengthened beyond the time necessary to produce the regenerative reaction. The usual complaint from the patient will be a slight blister or sore spot at the point of application some hours after exposure.

An over-exposure reaction is revealed by the presence of edema, swelling and hyperemia of the submucous tissue at and surrounding the site of application. A broken down vesicle will often be present.

Treatment of Over-exposures

In the treatment of over-exposure reactions nothing is usually indicated except the swabbing of the oral cavity with a mild antiseptic solution. A two percent solution of Mercurochrome or something similar is satisfactory. The patient can also be instructed to rinse out the mouth frequently with normal salt solution or a solution of bicarbonate of soda, one quarter teaspoonful to one-half glass of warm water. The use of Iodine in these conditions seems to be contra-indicated.



**The Burdick Faucet Type Dental Unit
Receptor Model**

for Alternating Current
L. W. 530

for Direct Current
L. W. 230

Over-exposure following application of Ultra-violet in the molar region will sometimes cause pseudo-trismus. This condition need cause no alarm because it will disappear in a few hours, no treatment being indicated except that above suggested.

In cases of non-reaction following an exposure the operator has to consider two things—first, whether or not the lesion he is treating will respond to Ultra-violet rays. Specific lesions will not respond; second, whether the trouble may be caused by incorrect voltage, amperage, or in the case of old style lamps, by possible deposit on the quartz window; thus preventing passage of the Ultra-violet rays.

Regardless of the extent of the reaction to Ultra-violet rays, the ultimate outcome is always favorable, and the only ill effects of over-exposure, even a severe over-exposure, are the tenderness of the area and the discomfort of the patient.

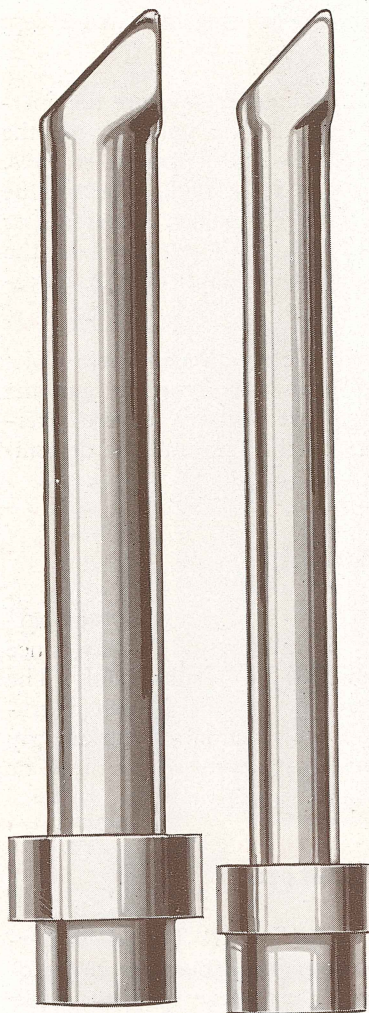
Ultra-violet will not Burn

A “burn” from Ultra-violet rays is in no way comparable to the destructive burn of radium and X-Ray, since the latter may be permanent and the results fatal. The most severe “burn” that can be produced with Ultra-violet results only in a temporary reaction and unfailingly clears up without the slightest formation of scar tissue or disfiguration.

Burdick Dental Applicators

Just as the Burdick EVER-CLEAR Dental Water-cooled Lamp is a new departure in Ultra-violet ray production, delivering the largest percentage of Ultra-violet energy of constant intensity for uniform technic, so the prismatic Burdick Dental Applicators are an entirely new departure for the application of Ultra-violet rays in dental therapy.

BURDICK QUARTZ



A. W. 25
6 inches long
 $\frac{5}{8}$ " diameter

A. W. 26
6 inches long
 $\frac{1}{2}$ " diameter

The Prismatic heads of Applicators A.W. 25, A. W. 26 and A.W. 18, deliver the Ultra-violet rays at right angles to the surface under treatment in a manner impossible to accomplish with any other type of applicator.

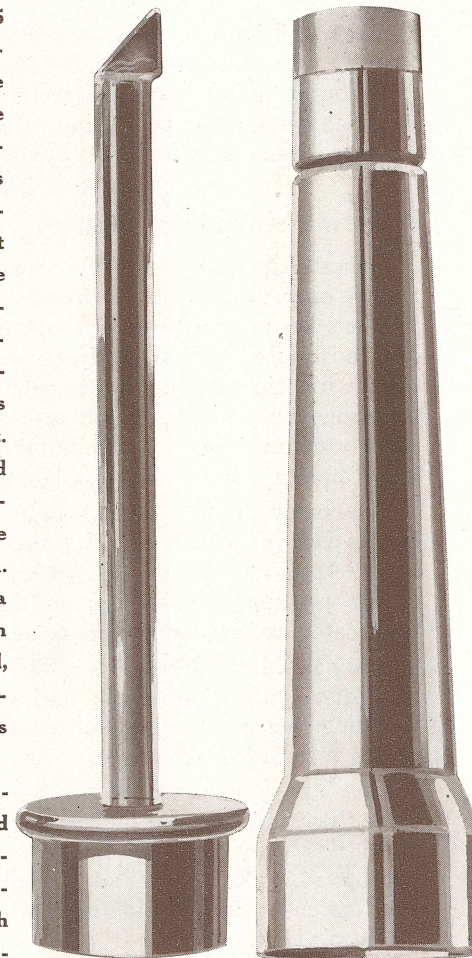
The volume of Ultra-violet ray transmission is in direct proportion to the diameter of the applicator; hence, Applicator A. W. 25 has a larger transmission capacity than A. W. 26, and should be used when intensity of application is desired, and when the use of a large applicator is possible.

Applicator A. W. 26 is designed especially for use in the treatment of children and in the treatment of remote portions of the mouth in adults not easily accessible with Applicator A. W. 25.

DENTAL APPLICATORS

Applicators A. W. 25 and A. W. 26 are formed from tubes of pure quartz, filled with triple distilled water and sealed. These applicators transmit a maximum intensity of the short Ultra-violet wave lengths which are so important for their bactericidal action. Applicator A. W. 18 is formed of solid quartz. It is small and adapted to work in the less accessible parts of the mouth. Applicator A. W. 67 is composed of a hollow metal tube with a quartz lens at the end, making possible the application of the rays under pressure.

Every Burdick applicator is carefully tested before leaving the factory. Our complete applicator catalog, which shows many special applicators will be sent on request.



A. W. 18
4 inches long
 $\frac{1}{4}$ in. diameter

A. W. 67
 $4\frac{7}{8}$ inches long
 $\frac{5}{8}$ in. diameter

These new dental applicators conduct Ultra-violet energy with the highest efficiency to the area under treatment, with the least possible leakage of the rays from the lateral walls of the applicator.

The applicators are so shaped that the rays may be applied with the greatest convenience to any portion of the mouth, or any group of teeth for the relief of pain or inflammation, for combating infections and for healing lacerated gums and processes.

A New Principle of Design

Dental Applicators A. W. 25 and A. W. 26 are designed on a new principle, based on exhaustive research that has been carried on for more than two years. They are constructed of hollow fused quartz tubes which are filled with triple-distilled water, the air being exhausted at the same time, and sealed off in a manner similar to any other vacuum device. These applicators transmit a maximum quantity of the shortest Ultra-violet wave lengths.

Applicator A. W. 67 has been found very efficient. It consists of a hollow metal tube with a clear quartz lens. Applicator A. W. 18 illustrates the group of solid quartz prismatic applicators. Others are listed in our Applicator catalog which will be sent on request.

The new Metal Retractors (illustrated upon the following page) afford a simple and convenient method of shielding the lips, the tongue or the gums from exposure during a series of exposures.

They are light in weight and carefully shaped so as to serve their purpose admirably. The dentist will not always find it necessary to use them. But when four or five teeth are treated, both lingually and labially, it is wise to protect your patient from irritation of other areas through leakage of Ultra-violet.

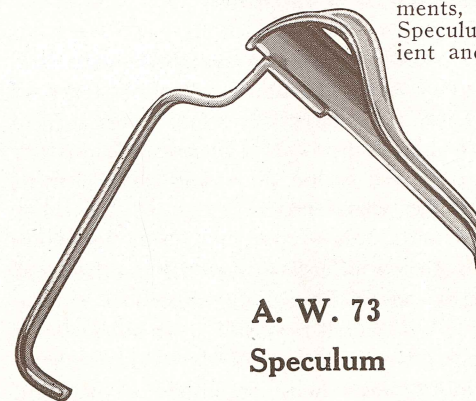
Sterilization of Applicators

The type of construction of these applicators renders them easy to cleanse and sterilize, leaving no rough surfaces for the accumulation of foreign matter.

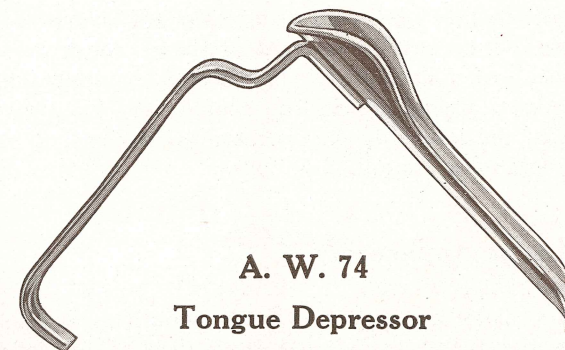
The Ultra-violet rays will keep the applicators prac-

The New Dental Retractors

There is always a slight leakage of Ultra-violet from the sides of the quartz applicators. To prevent irritation of the lips or gums during prolonged treatments, this new metal Speculum is both convenient and effective.



A. W. 73
Speculum



A. W. 74
Tongue Depressor

Especially in pyorrhea, where five or six teeth may be treated both lingually and labially at a single sitting, this metal Tongue Depressor will protect your patient's tongue from exposure to Ultra-violet leakage.

tically sterile. However, the use of a proper solution of Chlorazaine, or Sharp & Dohme Hexylresorcinol Solution S. T. 37 is recommended, but in no case should applicators be placed in a sterilizer with other dental instruments.

Operative Technique

Ultra-violet rays should not be considered a cure-all, but rather an adjunct to the usual correct or accepted treatment of the lesion. The most important procedure in any treatment is proper diagnosis. The previous history of the patient is of great value, and one of the most important factors to be considered.

Many lesions of the oral cavity are the sequelae of systemic conditions and it would be folly to try to eradicate them by Ultra-violet radiation. In many such cases, however, temporary relief of a decided character may often be brought about with intelligent, consistent Ultra-violet applications.

No attempt has been made to include instructions for the use of specula, tongue depressors, retractors, or appliances of that nature. The actual manipulation of Ultra-violet applicators in the mouth will vary to the extent of the choice of the operator as how best to work in the field of operation.

Use Large Applicators

Use as large an applicator in the mouth as is possible for the area being treated, and direct the Ultra-violet rays perpendicular to the part under treatment. Large applicators can generally be centered over any area desired as well as smaller applicators, so that any specific point may be reached. At the same time, rays which might be considered excessive for covering only a small point will most likely be a benefit to the surrounding tissues.

Necessary Preparation of Tissues and Use of Dyes

In the treating of mouth diseases, whenever Ultra-violet is used, it is always necessary to prepare the tissues first by repeated washing with warm water, by the use of peroxide of hydrogen, or with warm air. This is done to remove any coating of mucous, bits of food or any other foreign materials which would act as a screen to the Ultra-violet and prevent its absorption by the tissues to be treated. As a further aid to the absorption of the Ultra-violet, by the tissues, certain dyes which are photo-sensitive are very strongly advised. Rose bengale in an aqueous solution of 1 to 50,000 or eosin in a similar solution of 1 to 20,000 are among the best. These solutions are freely painted over the areas to be radiated after they have been thoroughly cleaned as indicated above.

Ergosterol, when irradiated by Ultra-violet, takes on the properties of the potent Vitamin D which has much to do with the control of calcium and phosphorus metabolism.

When bone repair is a factor to be considered in the treatment of mouth conditions, one drop of a specially prepared emulsion of ergosterol diluted with equal parts of alcohol and distilled water, should be added to nine drops of the photo-sensitive dye and this solution used as described above, before irradiating with Ultra-violet. The use of this emulsion is also indicated in conditions where a more rapid healing of the soft tissues is desired.

Abscesses

In the treatment of abscesses in dentistry, Ultra-violet rays play a great part, since they are not only a sterilizing agent but in addition one of the most helpful factors in the regeneration of bone processes in all forms of alveolar abscesses. In the treatment of acute abscesses, the first result following exposure is often the relief of pain. Incipient abscesses may often be aborted by the use of Ultra-violet rays.

At each sitting during the usual treatment, such as establishing drainage, cleaning out root canals, before



The Burdick Faucet Type Dental Unit

Suspension Model

The same unit as the one shown on page 14, except for the addition of the overhead supporting arm, from which the lamp is suspended and counter-balanced so that it may be held in position with no strain on the hand or wrist of the operator. The finish here is gray. Furnished also in mahogany or special finishes.

L. W. 531
for Alternating Current

L. W. 231
for Direct Current

placing dressings, and before the filling of root canals, Ultra-violet should be applied by means of a small prismatic applicator directly to the root canals through the cavity in the tooth.

Antrum Infections

Used as an adjunct or as a post-operative agent in acute cases and after each irrigation, especially in chronic cases, Ultra-violet rays always give some relief from pain and in most cases will shorten the duration of the infection.

The antrum should be thoroughly washed by repeated flushings with warm water, then sprayed with the dye to which has been added the ergosterol in the proportion of nine drops of the dye to one drop of the emulsion. Then radiate with Ultra-violet, using a suitable applicator which will direct the rays into the antrum beginning with an exposure of about 20 seconds. This procedure should be repeated at each sitting and the time of the exposure of the Ultra-violet gradually increased up to 60 seconds.

Exodontia

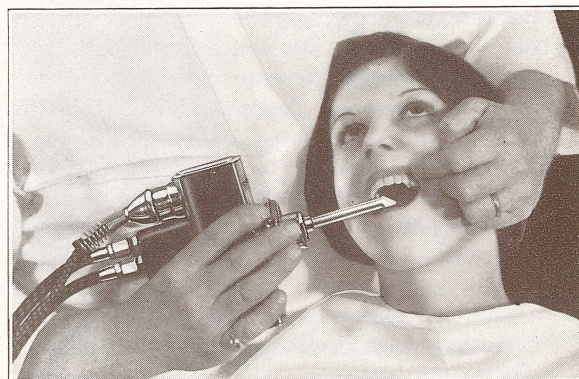
Ultra-violet following extraction gives uniformly splendid results, both in preventing post-operative complications and in the relief of pain. After thorough washing of the socket and after the hemorrhage is controlled spray the socket with the photo-sensitive dye to which ergosterol has been added and apply the rays directly over the socket bringing the applicator just to the rim of the socket. Do not attempt to apply pressure. Do not attempt to enter the socket with the applicator. Remember blood will diffuse the rays, and best results will, therefore, be obtained when used in the presence of as little blood as possible. The exposure should be 40 to 60 seconds for the first treatment and, if necessary to give a second treatment, the day following the removal of the tooth, 15 seconds longer. After the first exposure, the socket may be packed, if desired, with a suitable surgical dressing. If subsequent exposures are necessary, any dressing remaining should be removed. This same treatment will apply in the case of a single

Illustrating the labial irradiation of the lower incisors apically using the straight quartz applicator with rounded terminal which carries the rays direct to these areas at right angles.



Showing the lingual irradiation of the upper left bicuspid apically, through the prismatic quartz applicator which directs the Ultra-violet rays against the area at right angles.

The prismatic applicator shown is A. W. 26, preparatory for insertion in the mouth for labial radiation of upper left cuspid and bicuspid.



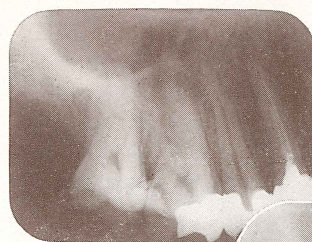
tooth or several, if removed at one sitting. After the removal of impacted third molars, it is often of benefit in addition to the above procedure to expose the external mandibular region one-half minute removing the applicator from the lamp and confining the radiation to as small an area as possible along the ramus of the mandible.

Gingivitis

In all forms, acute, sub-acute, chronic or hypertrophic, Ultra-violet radiation is of pronounced value with the results usually promptly apparent. Single point treatments may be made buccally, lingually and labially, over the area affected, care having been observed in the cleansing of the tissues and in the application of a dye. In addition to this local treatment, it is advisable in more extensive cases to use a thorough radiation of the entire mouth, which may be carried out as follows: Use a good sized quartz applicator not less than $\frac{5}{8}$ inches diameter at the tip. Start with the upper incisors and work distally toward the molar region radiating as large an area as the applicator will cover at a time, with an exposure at first of 15 seconds, holding the applicator so that the rays will reach the area perpendicularly. Proceed in the same manner on the other side of the upper jaw and then on both sides of the lower jaw. This enables the operator to save time and this full mouth treatment has proven very effective in conditions where the whole mouth is more or less involved. After the first treatment the general rule may be followed of increasing the exposure 5 to 10 seconds at each subsequent treatment. Increased tonicity usually appears promptly sometimes after the first treatment, with a decrease in the hyper-sensitiveness usually accompanying this condition. Photo sensitive dyes should be used in treating Gingivitis as outlined on page 21.

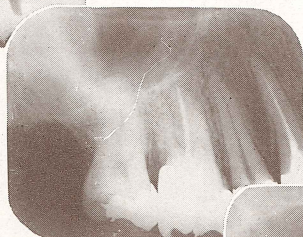
Neuralgia—Trifacial

With a good sized applicator, begin at the median line and work to the third molar on the side involved, making the application of the rays in a line with the apices of the teeth lingually, labially and buccally with an exposure of



September, 1921

Case I—Upper left first molar—large cavity in the disto-occlusal portion of the tooth. Pulp chamber was exposed, and canals infected; pain and swelling over the tooth. X-Ray showed distinct rarefied area over root ends. Case presented in September, 1921. First picture at that date.



July, 1927

Time of exposure increased 15 seconds at each treatment. Formo-cresol sealed in pulp chamber and root canals three times in two weeks. Canals then filled and gold inlay placed in the cavity later.



January, 1928

Treatment: formo-cresol in the cavity. Ultra-violet radiation applied over the root-end area both buccally and lingually, directly to mucous membrane, with slight pressure for 30 seconds. Treated every other day, 2 weeks.



February, 1924

Case II—Patient, male, forty years of age. Upper left lateral incisor in much the same condition as that described above. X-Ray reveals distinct rarefied area around the root-end. The tooth was cleaned and treated with Ultra-violet radiation both lingually and labially through a quartz applicator. Method and dosage as in preceding case.



October, 1925

Treatment continued according to routine described in Case I with marked improvement as shown in the photographs. The first picture shows the condition before treatment in 1924.



January, 1928

The affected areas in both cases show practically complete regeneration of the tissues. The teeth are giving good service and are perfectly comfortable. Treatment was completely satisfactory to the patient.

thirty seconds over each tooth. Remove the applicator from the lamp and radiate the side of the face involved direct from the lamp for 30 seconds at a distance which allows the rays to spread over the area comprising the temporal, superior and inferior dental branches of the fifth nerve. One treatment will often bring relief. If necessary, treatment can be repeated the next day increasing the intra-oral exposure to forty-five seconds.

Post-operative Infection

Following all surgery in the mouth, a thorough radiation of the parts involved for 40 seconds with a suitable applicator, as a routine procedure, will do much to eliminate post-operative infection. Inasmuch as Ultra-violet rays are intensely bactericidal, their action primarily is a good defense against infection.

Post-operative Pain

There is no better illustration of the analgesic action of Ultra-violet energy than is shown in the prevention and relief of post-operative pain following surgery in the mouth. Used as suggested under "Exodontia" and following excision of gum margins and gum tissue, as practised by some operators in pyorrhea, and in similar conditions, patients will complain of less post-operative pain and complications than with any other prophylactic measure. The exposure should be 45-60 seconds, with the applicator as close to the tissue as possible without making actual contact.

Pseudo—Ankylosis

This condition will be less troublesome or entirely absent following the extraction of impacted third molars, if Ultra-violet is used immediately following the operation, both intra-orally and extra-orally as outlined under "Exodontia."

Pyorrhea

The first time the patient presents, the entire mouth should be given a thorough general irradiation lingually,

buccally and labially, directing the rays over the apices of the teeth and along the gingival margins. The time of the first exposure is 10-20 seconds depending upon the severity of the condition. At the next sitting, clean thoroughly and scale as many teeth as possible for that sitting, going as deeply into the pockets as possible *once only*. Too much instrumentation is undesirable with Ultra-violet treatment. After that is done, radiate the entire mouth, as before, using an exposure 5-10 seconds longer. Repeat this procedure every other day or twice a week. Formation of pus will usually cease following the second treatment.

Soon thereafter an improved condition of the tissues as a whole will be noticeable. The severity of the case determines the number of treatments. It is recommended that the exposure time at each treatment be increased by 5 or 10 seconds until the exposure reaches a maximum of 1 minute. It is taken for granted that before attempting to treat pyorrhea, all prosthetic work, fillings, occlusion, etc., will be checked up and corrected where necessary. Following Ultra-violet radiation, hard structures usually show more tendency to regenerate in pyorrhea than do the soft tissues, but as a whole the clinical findings even in extreme cases will reveal a tightening of loose teeth and the cessation of pus formation. In the regeneration of the gingival gum tissues, the interdental papillae will show more tendency to push their way to normal position than the tissues around the necks of the teeth at the cemento-enamel junction. Photo sensitive dyes should be used in treating Pyorrhea as outlined on page 21.

Pulpitis

The benefits from Ultra-violet treatments here seem to be dependent upon the cause of the condition. If the tooth affected is thoroughly radiated for 30-40 seconds, moving the applicator slowly from the apex of the tooth towards the crown, a counter-irritant effect is produced which in most cases helps the condition and in some seems to effect a cure.

Stomatitis

In all forms of stomatitis, traumatic, systemic or infectious, the results from Ultra-violet treatments are very favorable, less so in conditions associated with severe systemic complications, such as diabetes, syphilis, etc. In infectious varieties from a slight gingivitis to a severe ulcerative type, Ultra-violet is a *specific* with little or no medication used in connection with it. The result in Vincent's Stomatitis and in Vincent's Angina are most striking. The general method of treatment for all forms of Stomatitis is to irradiate the mouth thoroughly, all areas of both upper and lower jaws, beginning with an exposure of 20 seconds on the lingual side and 20 seconds on the labial or buccal, increasing the exposure time as usual 5-10 seconds at each treatment. The treatment should occur every other day, or in very severe cases every day for the first few treatments. Use the applicator in as close contact with the tissues under treatment as possible. In some cases where there is a moth-eaten appearance of the inter-dental papillae, the applicator should be used along the gingival margin over each tooth and in each interproximal space, starting with an exposure of 20 seconds. In general, however, it is best to follow with this more localized treatment.

Miscellaneous

In teeth sensitive to percussion, in "toothache" (using the term generally) in sensitive gums, soft spongy gums, hyper-sensitive dentin, cellulitis, bursitis and similar conditions not readily classified otherwise, Ultra-violet rays often produce very striking and pleasing results. Radiate the area involved or the tooth itself lingually, buccally and labially from the occlusal surface to the apex 15-25 seconds, increasing the exposure time 5 seconds at subsequent treatments. This will often give so much relief to the patient that operative correction of the condition can be postponed indefinitely.

In Conclusion

The suggestions for technique above are not offered as final but as working methods that have been used successfully in a great number of cases. Ultra-violet radiation in dentistry is progressing rapidly. New methods are constantly being developed and applied much to the benefit of patients who appreciate treatments that are of a pleasant nature and a relief from the dreaded sessions usually encountered in the dentist's chair.

Further particulars relative to Ultra-violet and its application will be supplied gladly and without obligation.

THE BURDICK CORPORATION
Dental Division,
MILTON, WISCONSIN

THE ZOALITE IN DENTISTRY

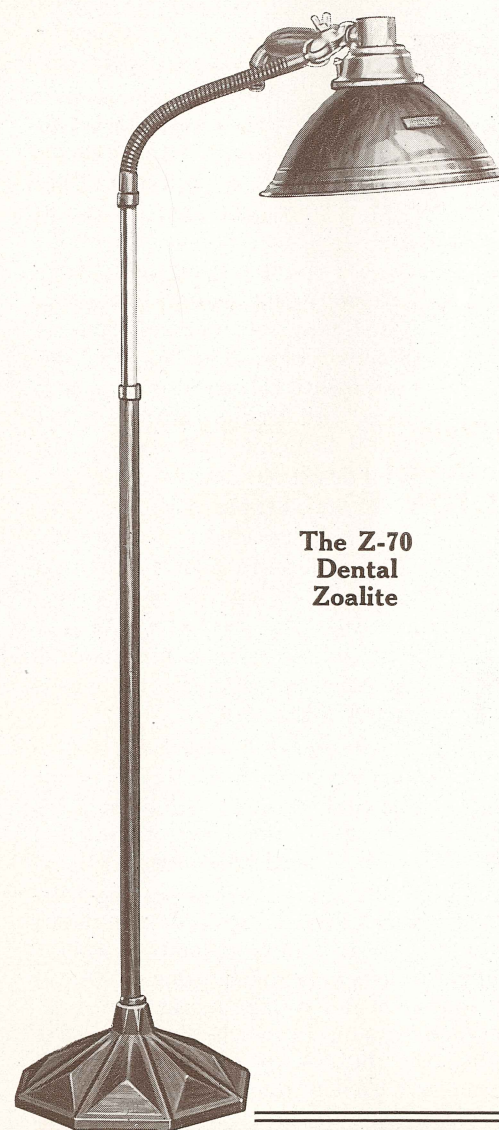
A Source of Infra-red Rays Conversive Heat

The great therapeutic value of the Zualite lies in its splendid efficiency as a generator of Infra-red radiation.

The most obvious effect of treatment with the Zualite is the production of conversive heat and the marked hyperemia that results therefrom.

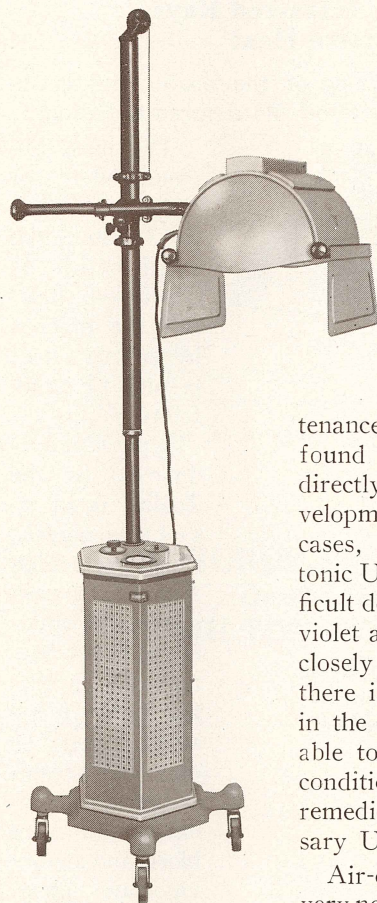
Hyperemia produced by the Zualite is in itself analgesic, thus lessening spasm due to pain in the area treated. It is also bactericidal, in that the greater blood supply may be expected to result in increased oxidation of the blood and a more vigorous phagocytosis.

For routine treatment, place the lamp at such a distance that a comfortable sensation of heat and a gradual reddening of the skin are produced.



**The Z-70
Dental
Zualite**

The Latest Addition to the Dental Armamentarium



**The New Burdick
Super-Standard
Air-cooled Lamp
Model**

**LA-123 for DC
LA-423 for AC**

A large volume of work in the Clinic and the Laboratory has proven that systemic Ultra-violet treatments increase the calcium-phosphorus content of the blood, stabilizing mineral metabolism and thus providing the material needed for the building, repair and main-

tenance of the teeth. It has been found that calcium deficiency is directly responsible for the development of caries in many cases, and that a sufficiency of tonic Ultra-violet will remedy difficult dentition. Air-cooled Ultra-violet and diet are, of course, very closely connected. Frequently, there is a sufficiency of calcium in the food, but the body is unable to make use of it until the condition of mineral imbalance is remedied by supplying the necessary Ultra-violet.

Air-cooled Ultra-violet is also very necessary in conditions where the vital resistance is lowered. By toning up the body it aids the work of local measures.

On this page you see the Burdick Super-Standard Air-cooled Quartz Lamp—a lamp so intense

that the usual treatment time is very much reduced—a precision lamp having voltmeter and voltage regulator for accurate control of dosage—a lamp in which all the rays are concentrated over an area the size of the average treatment table—a convenient, efficient, durable lamp.

LIGHT THERAPY



BURDICK

JANUARY-1929

Happy New Year

1928 has come and gone—a year in the doctor's calendar packed full of service and achievement.

We are glad that we have been able to have some part in the doctor's service to humanity.

We are glad that we have been able to furnish equipment on which he could depend.

We are glad for the new developments in light therapy equipment which our engineers have been able to make.

We are glad that we have been able to perfect the Single Bar Elements and put them in all Burdick Zoalites.

We are glad that we have been able to add to the efficiency of the Water-cooled lamp through the new Water Cell for the EVER-CLEAR window.

We are glad that we could make the Portable Ultra-violet lamp more efficient by the addition of shutters.

We are glad for all the achievements of the past.

The new year has come, and we hope to make it as full of service as the last.

We want to extend to all the physicians of this land a mighty wish for a good year, and the assurance that we will do all in our power to help them in their great service to humanity.

THE BURDICK CORPORATION.

Light Therapy

S. L. WILLIAMS, *Editor*
 GEORGE E. CROSLY, M.D., *Special Contributor*
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This page has stayed the same from month to month for altogether too long. Maybe you've seen it so often you never look at it any more. If this is the case you will miss an extremely interesting announcement.

Several splendid new reprints are now ready for distribution. They are listed below. You'll find them filled with interest in every page.

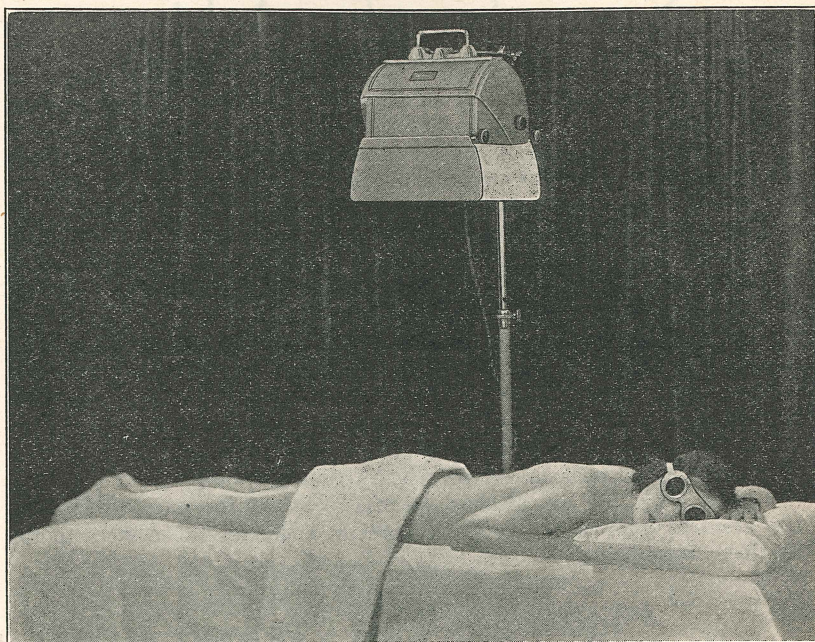
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Don't underestimate the value of this material simply because it comes to you without charge. The authors are regarded as authoritative on their subjects. The redistribution of their ideas is a contribution of the Burdick Corporation toward the general development of Light Therapy—with confidence that with increased knowledge of this new therapy, enthusiasm for its powers grows equally.

Look over this list of new material. Select the ones which hold the greatest interest for you, check them, and mail the coupon to the Burdick Corporation.

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- ☐ The Present Status of Radiation Therapy Part I (Ultra-violet therapy) by Frank Thomas Woodbury, M.D.
- ☐ The Present Status of Radiation Therapy Part II (Radio-therapy) by Frank Thomas Woodbury, M.D.



Treatment of Patient Convalescing from Influenza

Ultra-violet will materially shorten the time of convalescence after influenza. It will often bring the patient to better health than he has ever known before in a very short length of time.

Two to four exposures each week giving sub-intensive doses are required. The usual technique is $\frac{1}{2}$ to 1 minute anterior and posterior, increasing to from 4 to 6 minutes, at a skin distance of 30 inches.

The same technique is equally effective in influenza prophylaxis. The radiations raise the vital resistance so that the patient is unlikely to contract the disease.

Light Therapy

Published to further the commercial interests of The Burdick Corporation and the cause of Light Therapy in the world.

Volume 5

JANUARY, 1929

No. 1

Suggestions for Treatment of Influenza

BY THE EDITOR

Several years ago an epidemic of influenza swept this country carrying away a terrific number of people, often the strongest and best of the nation's citizens.

Today another epidemic is threatening. Physicians are preparing to meet and conquer this disease if it again sweeps the country. Physical therapy is their main reliance. In the former epidemic drugs often failed and surgery was powerless. Only physical therapy was really effective, and it was not as widely used as it should have been.

In the early stages of the disease, when the patient is feeling chilly or the body aches, the Zoalite applied to the feet and limbs will afford great relief. This exposure should be almost continuous. Further treatment is applied according to the form in which the disease manifest itself. Very often the lungs are affected. If this affection is in the nature of pneumonia, focus the Zoalite rays toward the consolidated area giving exposures as often as 6 to 8 times a day at such distance as to produce a comfortable sensation

of heat in the part treated. Continue the treatment from 20 to 30 minutes. If the development resembles pleurisy, use the same technique but make the heat more intense so as to produce a pronounced hyperemia in as short a time as possible.

The Zoalite used over the ears at comfortable distance for prolonged periods or for 20 to 30 minute intervals several times daily, at the first sign of trouble in that locality, will often prevent otitis media or mastoiditis from occurring. The Zoalite used over the face with the same technique will relieve troubles in the sinuses and prevent chronic sinusitis.

The Air-cooled Ultra-violet lamp used during the convalescent period will bring the patient back to strength and health in better than record time. The tonic irradiations are given twice or three times a week in sub-erythema doses. (Remember to give a small test dose before beginning the treatment and to keep the dosage below the erythema producing point as excessive dosage often does more harm than good in these

debilitated conditions).

By giving Ultra-violet radiations to increase the body resistance one can usually prevent the occurrence of influenza. This is one of the most important services of the medical profession—to prevent disease with its train of dangerous sequelae. For this work, treatments are given 2 or even 3 times weekly in sub-erythema doses. The time of irradiation will vary with the patient, from $\frac{1}{2}$ to 1 minute anterior and posterior, increasing to 4 or 6 minutes to each surface. The distance is usually 30 inches.

In order to facilitate matters for the physician who must treat his patient in the home, as is often the case with influenza, and to help the physician who cannot maintain prophylactic service in his office,

Burdick has devised a rental plan.

By this system the physician can obtain either the portable Zoalite Z-50 or the portable Ultra-violet lamp for a small rental fee. When he wants the lamp, it is only necessary for him to notify the nearest Burdick dealer (there is one in every large city with their representatives very widely scattered) and the lamp will be delivered at once at his patient's home, and will be called for again as soon as he notifies the dealer that he no longer needs the lamp. There is absolutely no cost to the doctor and not even the trouble of carrying the lamp around from patient to patient. These lamps are not advertised to the public and so remain absolutely under the physician's control.

BURDICK PRESCRIPTION POLICY

1. We will not advertise direct to the public the sale or rental of Ultra-violet lamps.

2. Burdick distributors will rent Ultra-violet lamps only upon the prescription of the physician actively in charge of each case—who will be responsible for their use and will order the return when the course of treatments is completed.

3. The request for Ultra-violet lamps must originate with the physician—not with the patient.

Published in The Journal of the American Medical Association,
May 12, 1928.

The Burdick Corporation,
Milton, Wis.

Please send me a copy of your revised booklet "Ultra-violet Therapy" and a pad of Prescription Blanks carrying the address of the nearest Burdick distributor.

Name

Address

City State

The Hospital and Physical Therapy

We are now ten years past the greatest revival of physical therapy that the medical world has ever seen, and today physical therapy is on a better basis than it has ever been. It is now recognized that it is not a specific for any medical or surgical condition but that it is capable of benefiting along with other medical and surgical treatment a wide range of conditions. Therefore, most hospitals need some form of physical therapy.

Preliminary Problems

Hospital administrators are confronted with the following preliminary problems about this department: (1) What constitutes an adequate physical-therapy service for their hospitals? (2) What service will this department render for the patients' betterment, particularly the class of patients in this hospital? (3) Is the expenditure justifiable inasmuch as there are many places where additional equipment might be used advantageously?

These questions must be answered separately for each hospital and can be answered only by a careful survey of typical cases in this hospital. For instance, even in special hospitals the class of cases makes a difference. A tuberculosis hospital with a majority of surgical tuberculosis cases will need more arrangements for ultra-violet radiation than one with mostly pulmonary types. A survey should include a numerical list of the various cases treated, giving the diagnoses.

As the physical-therapy labora-

tory takes its place as a recognized revenue-producing department of the hospital or clinic, it is essential that it be intelligently planned. An efficient arrangement that permits the minimum of fatigue to the attendants will be effective not alone in revenue, but particularly as a community therapeutic agency.

Staff

The department should have the necessary trained technical staff. Well-trained technicians are invaluable, not only in carrying out treatment ordered, but in observing and reporting symptoms and reactions to treatment. They should always be under the supervision of a medical director. Some of the routine work in this department could be done by pupil nurses. Nurses in training should have one or two months' assignment to the physical-therapy department during their course of training.

Much of the success of a hospital physical-therapy department will depend upon the man who is selected to direct it.

One logical selection of a physical-therapy department director would be a young progressive doctor who is about to complete his internship in the same hospital which is considering the installation of a physical-therapy department. This doctor should be sent to take a postgraduate course in a medical school. Such a man would be familiar with the hospital staff and would not have outside practice to jeopardize the interests of the staff physicians who refer patients for treatment.

The Layout

Two things particularly concern the layout problem. These are: first, the kind and amount of work as indicating the list of equipment that will be required, and second, the source of the patients, whether they are largely from within the hospital or from outside, that is, outpatients.

The list of equipment resulting from the above study may not be immediately available due to various causes, the two principal ones being lack of funds and lack of space, but no matter what obstacles are met in the organization of this department, that of insufficient floor space should be surmounted. Often a small amount of carefully selected apparatus will provide the funds needed to complete the department whereas any attempt to overcome limitations of space will generally result in decreased efficiency due to a congested or divided department.

The actual problem of arrangement is practically that of eliminating all unnecessary traveling on the part of patients and attendants. This problem can be understood best by following the patient in his movement through the department.

It is to be recognized that a modern hospital must provide all the scientific methods for aiding cure, shortening temporary, and preventing permanent disability. Therefore, all hospitals need some form of physical therapy, and the requirements can be determined only by an individual survey of each hospital.

Planning a Physical Therapy Department.

John S. Coulter, M. D.

Hospital Progress, November, 1928, Page 450-451.

LOBAR AND BRONCHIAL PNEUMONIAS CALL FOR ULTRA-VIOLET AFTER CRISIS

Ultraviolet radiation of patients has proved highly effective in rickets, and its beneficial effect in tuberculosis is well known. During the past eighteen months, the writers have treated a large number of cases of pulmonary and surgical tuberculosis with improvement in a high percentage. The authors stress the remarkable general response of practically all tuberculous patients, both pulmonary and extrapulmonary, to ultraviolet treatment. With the advent of helio-therapy reinforced by artificial light therapy, the tendency to introspection and pessimism was replaced by a high optimism, and the patients became bright and cheerful. For the last six months, irradiation has been practiced on acute lobar and bronchial pneumonias, immediately after the crisis had occurred or immediately after the temperature had settled. In the case of children suffering from whooping cough, without any pneumonic complications, ultraviolet irradiation has been practiced from the day of admission, apparently with much benefit. Pneumonias seem to be making a more rapid convalescence under ultra-violet therapy. The method is also being tried in diphtheria.

Scientific Basis of Phototherapy
Griffith and Taylor

Radiology, 1928, 10, 93.

But Less Thrills

"My wife explored my pockets last night."

"What did she get?"

"About the same as any other explorer—enough material for a lecture."—Oral Hygiene.

How To Treat

No. 30—Burns with Infra-red and Ultra-violet

By George E. Crosley, M. D.

From the small child, who through curiosity or accident, comes in contact with something hot enough to destroy tissue, to the old and experienced worker with X-ray or Radium, burns are the common heritage of mankind. Whether due to X-ray, Radium, poison gas, steam, heated liquids or solids, all burns have many characteristics in common.

In all burns there is more or less destruction of tissue and, in continuity with the tissue actually destroyed, is a greater or less amount of tissue, the vitality of which is impaired. This fact greatly delays healing and predisposes to the development of infection with the attendant symptom of pain which is present in all burns. The problem seems to be to allay pain, prevent infection and increase the blood supply. In Ultra-violet light and Infra-red radiation we have a safe and efficient means of accomplishing both disinfection and increased blood supply. An efficient, inexpensive, clean, quiet source of Infra-red is obtained from the Zoalite. For ordinary burns this may be applied at such distance as will produce a comfortable, soothing sensation of heat in the part treated, with the treatment continued for 15 to 30 minutes and repeated several times a day.

Following the treatment with Infra-red radiations the Water-cooled Ever-Clear Quartz Mercury

Arc lamp is applied at two inch skin distance for five to ten seconds for its germicidal and stimulating effect. The Ultra-violet application may be made once in twenty-four to forty-eight hours, just after, but never before an Infra-red treatment with the Zoalite.

Dr. F. H. Humphris (1)—states, "Burns of all kinds heal much more quickly if given small and frequent doses of Ultraviolet radiation. The epithelium grows more rapidly and the wound assumes a healthy aspect in less time than by any other method with which I am familiar."

He also finds that pain is reduced with this method of treatment if the burned area is covered with a film of liquid paraffin and the burned area and surrounding skin are radiated. He reports a more rapid, healthy and elastic growth of epithelium than by any other method.

Drs. Russell and Russell (2)—have found that burns and scalds whether due to thermal, electrical or chemical causes respond well to Ultra-violet radiations. They note the bactericidal action and the stimulation of new cell formation. They suggest using sterile gauze or picric-acid dressings after irradiation.

McKenzie and King (3)—mention the fact that burns and scalds due to thermal effects heal more quickly under Ultra-violet than un-

der other forms of treatment; and that chemical burns are cured "astonishingly quickly under Ultra-violet radiation."

PLANK'S TECHNIQUE

Plank (4)—uses a local dressing of five to twenty per cent solution of oleum terebinthina in olive oil. He also mentions picric-acid, petrolatum and paraffin, preparations as dressings. He believes in the more or less continuous administration of light and heat. "After the first forty-eight hours, begin treatment with a few flashes from the Water-cooled lamp at a distance of one inch, or the Air-cooled lamp at a distance of twelve inches for one minute gradually increasing the time, but always being careful not to blister. These treatments should be repeated daily. Phototherapy treatments leave a soft, pliable scar."

X-RAY AND RADIUM BURNS

X-ray and Radium burns are in a class by themselves, slow in developing, slower still in healing, and they constitute one of the most trying conditions which we are called upon to treat. Pain is a prominent and trying symptom, and is not relieved by excluding the air.

Actinic light from the Water-cooled lamp has been used with a marked degree of success in these cases. It now appears that the Infra-red radiations are of even greater importance in this condition.

In a discussion of Infra-red rays, Humphris (1) says: "But perhaps the greatest value of these rays in dermatology is due to the antagonistic effect they have for rays of different wave length, notably X-rays.

"Use is made of this antagonism to prevent and cure X-ray skin lesions. The importance of this can hardly be over-estimated. The Infra-red ray has a definite preventative or curative action of radio-dermatitis.

"In those patients who are subjected to repeated fluoroscopic examinations, a dermatitis may be avoided by applying Infra-red rays for half an hour after the X-ray examination."

HUMPHRIS' TECHNIQUE

Dr. Humphris' technique in the treatment of acute dermatitis due to X-ray is a daily twenty minute irradiation with Infra-red. The rays are focused on the center of the burn and at right angles to it, and cover an area twice the size of the lesion. He obtains a hyperemia as intense as possible without producing pain or a heat burn. If pain is increased before the treatment is ended, it is interrupted for a time and then resumed.

The length of time treatments will be required varies with the severity of the case and its duration. As a rule, the more recent the X-ray burn, the shorter the period required to heal the same. Marked improvement should be observed by the end of a month, even in severe cases. As evidence of improvement, erythema begins to fade, the telangiectases are less in evidence, and pain is lessened.

REFERENCES

1. "Artificial Sunlight and its Therapeutic Uses" by Francis Howard Humphris, M. D., F.R.C.P. (Edin.), M.R.C.S. (Eng.), L.R.C.P. (Lond.) Fourth Edition, 1928, Revised and Enlarged.
2. "Ultra-violet Radiation and

Actinotherapy" by Drs. Russell and Russell of England.

3. "Practical Ultra-violet Light Therapy" by T. Clyde McKenzie, M.B., Ch. B., and A. A. King, Birmingham, England, 1926.

4. "Actinotherapy and Allied Physical Therapy" by T. Howard Plank, M. D., San Francisco, 1926.

ULTRA-VIOLET NOT HARMFUL IN DIABETES

Professor Rothman found that irradiation actually decreased abnormal amounts of blood sugar, while Dr. Saidman proved the same. When he returned from Paris he got together a number of patients suffering from diabetes and submitted them to a course of irradiation as a result of which he could state that there had been no bad effects. In one case 218 grammes of sugar decreased in a short time to 6 grammes.

Contra-Indications for Ultra-violet Therapy.

Dr. L. G. Dugestel (Paris).
British Journal of Actinotherapy, April, 1928, page 5.

ULTRA-VIOLET THERAPY TO SURVIVE IN SPITE OF "SUBSTITUTES"

The emphasis laid by the Journal on the fact that irradiated ergosterol did not and could not entirely replace direct irradiation, is given point by the latest work on the subject of vitamins. For it now appears that the two fat soluble vitamins are more or less complementary.

Irradiation and vitamin A have somewhat similar functions with regard to immunity, so that both

can act as adjuncts to vitamin D; but the first mentioned has many other functions, among which is the power of producing vitamin D. Each has its functions, but they are interrelated, and one cannot monopolize the work of the other.

Ultra-violet irradiation is known to raise the general immunity to infection, which has now been shown to be a function of vitamin A. It would therefore not be surprising were some direct connection discovered between Ultra-violet irradiation and vitamin A, similar to that which is known to exist between such irradiation and vitamin D. In any case the claim for sunlight, natural or artificial, as preferable to vitamin D alone, is amply vindicated—as was inevitable when one realizes that it was merely a claim that the whole is greater than the part.

The Vindication of Sunlight
The British Journal of
Actinotherapy

November, 1928. Page 146.

THIS TREATMENT FOR ULTRA-VIOLET OVERDOSE

Irritation of the skin from ultra-violet rays may be allayed by resorcin and prevented by applying quinine ointment or a soap containing sodium naphthosulphate, or by ten per cent tannin in petrolatum or alcohol, or by gradually increasing the dosage of ultra-violet. Ultraviolet is nullified by caloric radiation. The combination lessens the incidence of sunburn.

"Physiological Reactions to Radiant Energy."

By Frank Thomas Woodbury, M. D., N. Y. C.

Taken from PHYSICAL THERAPEUTICS,
July, 1928, page 334.

GENERAL PRACTITIONER NEEDS ULTRA-VIOLET

The application of any form of radiant energy to disease must eventually come within the province of the general practitioner in medicine. It is to be regretted that at the present time the members of the medical profession as a whole have not made themselves familiar with a most powerful source of energy which will help them to solve many daily problems in the treatment of disease.

In a country like Australia, with its abundance of sunshine, the remark is often heard that "artificial sunlight" as it is called, is not required, as there is a plentiful supply of natural sunlight for all. This is, like most half-truths, a most misleading statement.

The following wave lengths are important and should be memorized in ultra-violet work: Visible light covers the region from 7,000 Angstrom units down to 4,000 Angstrom units, while ultra-violet rays extend from 4,000 Angstrom units to 1,850 Angstrom units for practical purposes. Below that figure they fail to penetrate air and are of academic interest only. The term "artificial sunlight" is a very bad one, for we get no ultra-violet radiation from the sun below 2,950 Angstrom units even on a high mountain on a bright day. Ultra-violet rays include short, medium and long, the latter only being obtained from the sun. The maximum biological action of ultra-violet light appears to be obtained from waves between 2,400 Angstrom units and 2,700 Angstrom units, so artificial sources of ultra-violet radiation act mostly with wave lengths shorter than 3,000 Angstrom units and the sun

with rays mostly longer than 3,000 Angstrom units. It will be seen from the above facts that the term "artificial sunlight" is a bad one and that the idea that natural sunlight can be utilized in the treatment of disease as successfully as "artificial" is incorrect.

Rollier, of Leysin, has said "Sun and ultra-violet rays bear much the same relation to one another as crude drugs to their synthetically prepared chemical substitutes."

Ultra-violet Radiation.

J. Bell Ferguson, M. D.,
M. R. C. P., D. P. H.

The American Journal of Physical Therapy, September, 1928, page 257.

MEDICAL JOURNALS DEVOTE MUCH SPACE TO PHYSICAL THERAPY

A study of the current medical literature shows the extent to which physical therapy is occupying the attention of students, clinicians and writers. The Quarterly Cumulative Index, for 1916, listed 13 articles under the headings "Physiotherapy," "Ultra-violet" and "Diathermy;" while, during 1926, the same publication listed 190 articles on the same three subjects, as well as 47 others on exercise, radiotherapy, hydrotherapy, massage, etc.—a total of 237 articles on physical therapeutic agencies and their uses.

High Lights of the Past Year's Physical Therapy Literature.

Archives of Physical Therapy, X-Ray, Radium, September, 1928, page 413.

The Prevention and Cure of Respiratory Conditions

This is the season when snow and slush and lack of natural Ultra-violet conspire with germs to bring just as many people under the doctor's care as possible. Often the doctor is rushed from morning till night, and long afterward, with cases of pneumonia, bronchitis, pleurisy, acute sinusitis, grip, hard colds and "flu."

Physical therapy will help the doctor cure and prevent these diseases. (We will be glad to outline the technique which other physicians have found most successful in their treatment of these diseases, if you do not have our Infra-red and Ultra-violet manuals.)

Perhaps the better part of cure is prevention. There are two kinds of prevention—absolute prevention, and partial prevention. If the physician starts his prevention at the cradle, builds a perfect body with a perfectly formed chest, and then keeps that body in condition on through life, he is practicing absolute prevention. If he sees his patient when the body is already formed, he still has a chance to improve that patient's resistance to disease, and give him a more radiantly healthy life. This is partial prevention.

It is stated by pediatricians that from 50 to 75 percent of all respiratory infections are caused by malformations of the chest which have been caused by rickets, (recognized or unrecognized) which in turn is

caused by a lack of Ultra-violet. If every child was given a course of Ultra-violet treatments (12) at least twice during each winter, and either natural sunlight or Ultra-violet treatments during the summer from the time it was one month old on up, there would be no rickets—and no ill-formed bodies—and so very few respiratory infections.

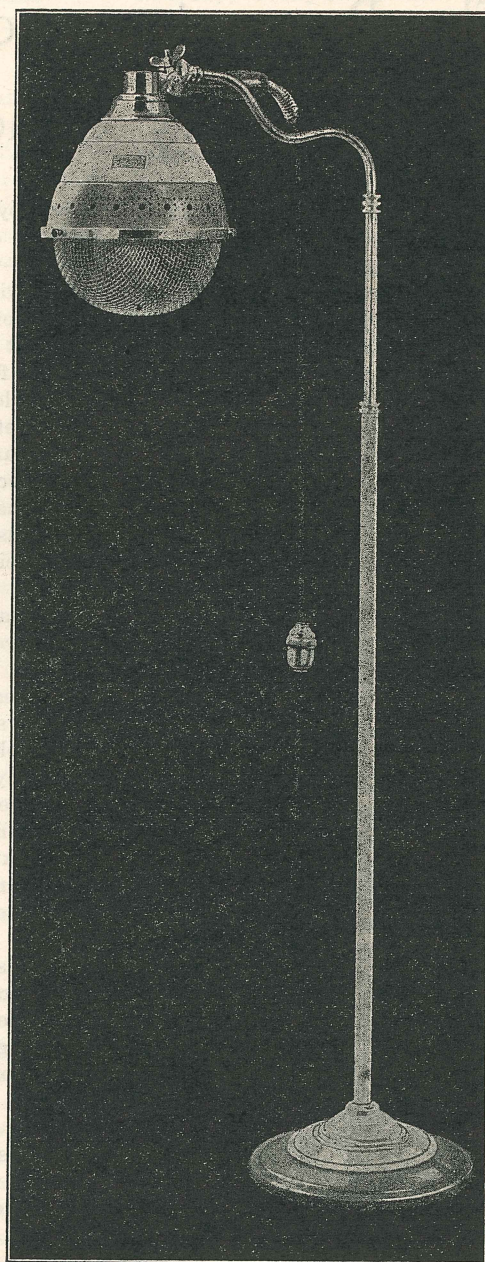
For many patients partial prevention is the only possible kind since their bodies cannot be reformed. Partial prevention is often nearly as effective as absolute prevention when carried out properly. By giving Ultra-violet tonic treatments all during the dark days of winter, and either Ultra-violet or sun treatment less frequently during the summer, the resistance can be so built up that respiratory infections will be almost unknown.

Right now, in the season when these diseases are so prevalent is the time to initiate these preventive measures, as well as to get the best curative measures into action. The preventive measures are of the greatest importance for when you can get them well launched, there will be much less need for curative measures. Prevention is just as remunerative to you, and far more comfortable for your patient.



The Z-50 Zoalite

This is the new prescription model. A highly polished reflector of the latest and most perfect design holds the 400-watt Single-bar element and distributes the rays evenly over the area treated. "Hot spots" are entirely eliminated. A light but sturdy telescopic stand, adjustable from 24 to 50 inches is used for the prolonged treatments which are so effective. A flexible arm directs the rays at right angles for maximum penetration. This graceful lamp has a beautiful two-tone finish in ivory and grey lacquer.



The Zoalite Series Passes in Review

You, healers of the ills of humanity, need Infra-red! Nothing else can take its place in the treatment of so many of the conditions with which you constantly battle. No other remedy will bring so much relief in influenza, or pneumonia or bronchitis. No other treatment will as quickly relieve otitis media, sinusitis, colds, carbuncles, burns, sprains, and a score of other very serious conditions.

You need an intense source of Infra-red so generated that you can use it both generally and locally, in the hospital, in your offices or in your patient's home. Burdick has striven very hard to meet your requirements. In the Zoalite series just completed, you have Infra-red radiations with maximum intensity and in the most convenient form for general, local and home treatment.

The Z-30, Burdick's master model, is the largest of the Zoalites, designed particularly for general irradiation in your office or in the hospital. All those physicians who have installed it as a part of their equipment are unlimited in their praise of it as a therapeutic agent.

This powerful generator has a 850 watt single-bar element with the ideal black body non-metallic surface. The rays are reflected and directed by a carefully ventilated, highly polished metal reflector, so designed that all "hot-spots" have been eliminated.

This generator is mounted on a perfectly balanced upright with a horizontal bar moving on a ball-bearing swivel joint. The lamp moves in a recessed track. It is finished in a delicate gray lacquer, trimmed in highly polished nickel, with stand and upright of shining black. Every detail has been worked out with such care and precision as to make this the Rolls-Royce among Zoalite models.

The next member of the Zoalite series is the Z-12, the physician's lamp of greatest adaptability—a lamp equally practical for both general or local irradiation. It is a smaller lamp than the Z-30, having a 600 watt single-bar element. This lamp is used closer to the body than the Z-30, providing a very intense degree of irradiation, but covering a smaller area at one time. It is large enough for convenience and efficiency in giving general body irradiations, and still just the right size for giving local treatments. It is finished in the same attractive gray lacquer and polished nickel, has great adaptability—a gooseneck arm, and an adjustable height of from 30 to 80 inches. This lamp is just as necessary in your office as is the Z-30. You absolutely cannot be without it.

The third and new member of the Zoalite series is the Z-50. It is designed for local work only—a beautiful little lamp, with a 400 watt single-bar element, easily portable and wholly efficient in its

field. This is the lamp which you can prescribe for treatment of cases which cannot come to your office and either cannot or do not need to be hospitalized. This lamp can be obtained within a few minutes or a few hours from your nearest Burdick dealer, delivered to your patient's home by the dealer on your order, retained for a small rental for as long as you need it, and taken up by the dealer at your request. There is no expense to yourself, unless you wish to purchase the lamp and rent it yourself to your patients.

This lamp is finished very differently than the lamps which appear in your office. The dome is done in ivory and gray lacquer with a decorative border around the edge. The stand, exclusive of the base, is in the ivory lacquer, while the base is of gray. It is a most attractive unit—one which we are sure you will heartily welcome to your aid.

The Burdick Corporation,
Milton, Wis.

Gentlemen:—

Please send me your latest booklet illustrating the new Zoalite Series.

Name

Address

City..... State.....

ULTRA-VIOLET SUCCESSFUL IN TUBERCULOSIS

Ultra-violet radiation acts well in skin tuberculosis, in bone and joint tuberculosis, in mesenteric tuberculosis and in tuberculous adenitis and more or less in the order given. Treatment must be prolonged, but the results are well worth the time and energy expended.

In lung tuberculosis, acute, progressive and febrile lesions with softening are a definite contraindication. On the other hand, febrile patients and those with fibrosis respond well to radiation, provided great care is exercised in dosage and the treatment carefully supervised.

Ultra-violet Radiation.

J. Bell Ferguson, M. D.,

M. R. C. P., D. P. H.

The American Journal of Physical Therapy, September, 1928, page 261.

THE BLOOD CHEMISTRY IN TUBERCULOSIS

Analyses of the blood calcium, phosphates and cholesterol, were made in twelve adults with undoubted tuberculous lesions. Eight were pulmonary cases, all of whom had, or had had, tubercle bacilli in the sputum. All had been under supervision for a considerable period before irradiation. The analyses were done by the methods described in "Recent Advances in Medicine," by Beaumont and Dodds.

Before irradiation the calcium figures varied between 8.0 mg. to 10.24 mg. per 100 cc. of serum (in adults the normal figure is between 9 mg. and 10 mg.); the phosphates varied from 3.67 mg. to 5.35 mg. per 100 cc. of serum, and the cholesterol from 112 mg. to 177 mg. In no case was any constant relationship observed between the blood findings and the clinical condition.

Irradiation (by a Mercury vapour lamp) graduated according to Rollier's method, was begun immediately after the first blood examination was made. After ten exposures one patient became febrile and developed morning sickness and vomiting. His blood was immediately taken, and though no change was observed in the calcium and phosphate figures, the cholesterol showed a definite drop (from 160 mg. to 140 mg.). The exposures were accordingly discontinued. The other cases continued treatment daily, and after a month a second blood analysis was made. It was then found that in one case the calcium and phosphate figures had remained unchanged, half of the others showed a slight increase,

the other half a slight decrease. The cholesterol, however, had risen considerably in every case, the greatest rise occurring in the patients who, clinically, had shown most improvement.

As we have seen, all observers agree that a rising blood cholesterol accompanies healing, and is of good prognostic significance; therefore, we are justified in stating that irradiation has initiated some reaction favouring resistance to the disease.

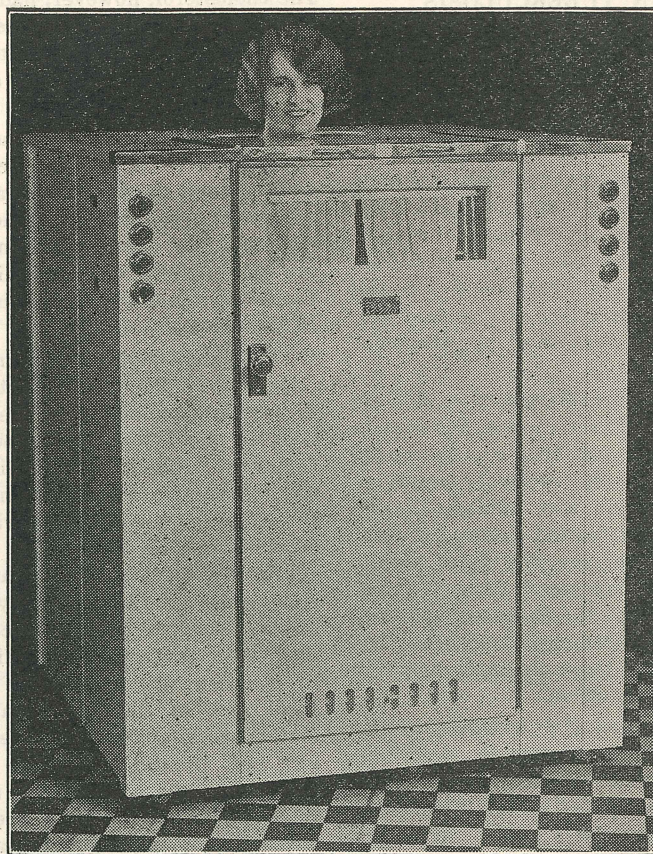
The figures for the calcium and phosphates at first sight are rather disheartening, but one must bear in mind that the important factor in calcium metabolism is not the total amount present, but the balance between the various forms in which it occurs. Janet Clark (1924), assuming that calcium is bound electrically by negatively charged protein, considered that Ultra-violet irradiation, by discharging this protein, would free some of the bound calcium, and thus increase the percentage of ionized calcium. Accordingly, she irradiated serum in a quartz tube with a mercury vapour lamp, and found that the diffusible calcium was always increased unless it had been very high originally. Here is possibly the explanation of the increased calcification which occurs in tubercle even though no rise in the total calcium can be observed.

Effect of Irradiation on the
Blood Chemistry in
Tuberculosis.

Katherine C. Spence, M.D.,
D.P.H.

The British Journal of
Actinotherapy.

November, 1928. Page 149.



Light Bath in the Professional Special

The patient taking Burdick Light Baths is carried through the process of relaxation, artificial internal temperature, vasomotor stimulation (rushing of the blood to the surface of the body), and profuse diaphoresis (sweating), all within the primary period of 8 to 10 minutes, with all the tonic and invigorating effects of the Light Bath and without any of the enervating effects common to old type "Hot-Boxes."

The Evolution of the Light Bath

In the evolution of the Light Bath from the days of the old type "hot-box" to the modern Burdick Light Bath has come one of the greatest physical modalities known to science for the maintenance of health.

A clear understanding of the fullness of this statement may be more fully obtained by the comparison of two brief word pictures of the physiologic effects set up in the individual organism under the old and the new types of Light Baths.

All Light Baths that do not carry the Burdick name, are designed on the old "hot-box" principle without ventilation control, depending upon incandescent lamps to develop high temperatures for sweating purposes only. The heat in these non-ventilated cabinets often reaches the terrific temperatures of 180° to 200° F. with a much higher temperature in the upper part of the cabinet in the region of the heart. Beside this a vast amount of poisonous exudates from the body are retained in the cabinet. These gases must be re-absorbed into the blood stream through the skin when the blood returns to the surface of the body in the secondary stage of the bath.

The Old Type Light Bath

1. The intense temperature of the old type super-heated Light Bath serves as an extreme irritant to the peripheral nerve endings,

stimulating the vasomotor system to violent action causing

- (a) the skin to contract,
- (b) the blood vessels at the surface to collapse, forcing the blood to the internal organs, often producing an undue burden upon the heart and also nausea with headache.
- (c) great stimulation of the vital functions temporarily during the primary or stimulative period of the Light Bath.

2. The "primary period" continues on an average of about 15 minutes before the "secondary period" begins. While there may be some sweating effect from the mere stimulation of the sweat glands during this "primary action," the skin contraction persists until relaxation comes from partial or complete exhaustion usually after 20 to 30 minutes in the bath.

An hour or more on the rest cot is usually necessary to recover sufficiently to go about one's work after completing one of these enervating Light Baths.

The New Type Burdick Light Bath

The new type Burdick Light Bath practically reverses all the physiologic effects described in this word picture of the old type Light Bath.

1. The lights in the cabinet are turned on gradually, thus avoiding shock to the vasomotor system.
2. The Burdick ventilating sys-

tem gives absolute control of temperature within the "neutral zone"—15° above blood temperature.

3. The free flow of fresh, pure air through the Light Bath (as may be shown by holding a piece of lighted paper or a cigarette in front of the open ventilators in the bottom of the front door and watching the movement of the smoke inside the cabinet through the glass window) carries off the noxious odors, gases, and poisonous exudates eliminated from the body of the patient, leaving the air inside pure. This greatly aids elimination and oxidation as the blood is brought to the surface of the body, actively flushing every capillary of the skin during the secondary stages of the Light Bath.

4. The circular flow of air inside gives an even distribution of heat so that there can be no accumulation of heat in the upper part of the cabinet in the region of the patient's heart.

The physiologic effects obtainable with proper technique in Burdick Light Baths gives an interesting picture of nature at work—

(a) Under the sedative action of neutral temperature in the controlled Light Bath the vasomotor system is soothed, the skin and muscles relaxed, and the patient placed in a condition of comfort and repose.

(b) With the skin and muscles relaxed the light rays penetrate the tissues with almost 100 per cent absorption into the lymph and blood streams.

(c) The general absorption of the Infra-red rays produces heat—artificial temperature. This means increased combustion—the burning up of waste ma-

terials and toxic products, especially during the first period (approximately 2 minutes of the bath).

(d) The second 2-minute period of the bath is marked by an extreme dilatation of the blood vessels in the skin, producing an active flushing of the skin of the entire body (general hyperemia), carrying the waste produced from combustion (in the first period of the bath) to the surface of the body for elimination.

(e) The third period of the bath is marked by an active stimulation of the sweat glands. This sweating process may be continued as long as desired, but in the Burdick Light Bath the most active sweating is accomplished within 8 to 10 minutes—within the primary or stimulating period of the Light Bath without the slightest degree of any of the adverse effects described in the picture of the old type Light Bath. In other words, the patient is invigorated and not depressed. The sweating is all accomplished within the primary period without enervation and the patient has no depressing after effects, and is not likely to take cold in going out into the open.

Won't Daddy Be Pleased?

"We've had the best time playing postman," exclaimed the small hopeful of the family. "We gave a letter to every lady in the block."

"But where did you get the letters, dear?"

"Oh, we found 'em in your trunk in the attic, all tied up with a blue ribbon."—Oral Hygiene.

A SURVEY Of the Ultra-violet Situation As Related to the Profession

By George E. Crosley, M. D.

Editor's Note—This is the third installment of a comprehensive compendium of what has been written on Ultra-violet by many widely known medical authorities. The first chapter appeared in the November issue of *Light Therapy*.

Rosenheim and Webster of England, Hess, Weinstock and Hellman and also Steenbock and Black in the United States demonstrated that tissue containing cholesterol or some substance allied thereto could be rendered antirachitic by exposure to the Ultra-violet ray. Further investigation in Germany, the United States and England has demonstrated that cholesterol is not the substance activated, but it is ergosterol instead.

The following extracts are taken from an article by Morton, Heilbron and Kamm. One reaches the conclusion that sunlight, at certain favorable times, emits ultra-violet of antirachitic potency. On the other hand, the more active antirachitic bands occur at 2930, 2800 and 2690 A.U.—the shorter wave lengths which are never present in sunlight.

"It has been shown (Heilbron, Kamm, and Morton, *Biochem. J.*, 1927, 21, 78) that the antirachitic potency developed on irradiation of ordinary cholesterol, either from cod-liver oil or from brain, may be traced to the presence in it of a minute quantity of some foreign substance which exhibits well-defined absorption bands near 2935

A. U. and 2700 A. U.. These bands disappear on irradiation, concomitantly with the development of antirachitic potency in the product. A similar conclusion was almost simultaneously arrived at by Pohl (*Nach. Ges. Wiss. Gottingen*, 1926) using an entirely different spectroscopic technique (monochromatic light and photoelectric cells). These results are also substantiated by the fact that cholesterol regenerated from its dibromide could not be activated by irradiation with ultra-violet light. Subsequent work developed by using the spectroscopic method rapidly led to the conclusion that ergosterol—or a similar sterol—is the actual pro-vitamin, and this has been fully substantiated by animal tests (Rosenheim and Webster, *Biochem. J.*, 1927, 21, 127; Windaus and Hess, *Nach. Ges. Wiss. Gottingen*, 1926).

"In extension of our earlier work, it became necessary to examine in detail the absorption spectrum of ergosterol, in order to establish an accurate standard of comparison by means of which we could determine the relative richness of various materials in respect of the pro-vitamin.

"In agreement with the work of Pohl as briefly reported by Windaus and Hess (*loc. cit.*) our results correspond in a very remarkable degree with the absorption

curve found for ordinary cholesterol:

	MAX.	MAX.	MAX.
CHOLESTEROL	2930 A.U.	2800 A.U.	2690 A.U.
ERGOSTEROL	2935 A.U.	2815 A.U.	2700 A.U.

"The results of biological experiments have now come to hand and show that the product giving the 2470 A. U. band at maximum intensity possesses very high antirachitic potency, whereas the product which has undergone irradiation until this band has disappeared is not effective at the same dosage. The tests were kindly carried out by Messrs. H. Jephcott and A. L. Bacharach, using the method described in their paper (Biochem. J., 1926, 20, 1351).

"Some comment is necessary on a statement by Rosenheim and Webster (Biochem. J., 1927, 21, 395) to the effect that the absorption of ergosterol 'extends well into the ultra-violet region of sunlight.' The facts appear to be as follows. Dorno found that the limiting detectable ultra-violet wave-lengths of sunlight were: December-February, 3120 A.U.; September-November, 3080 A.U.; March-May, 3010 A.U.; June-August, 2962 A.U.; the relative intensities being Jan. 100, April 400, July 1000, October 600.

"Only a very small area of the ergosterol absorption is covered by wavelengths on the long-wave side of 2960 A.U., and appreciable photochemical reaction only appears possible in summer sunlight. This is, of course, in harmony with the seasonal incidence of rickets."

—CCLXIII.—The Absorption Spectrum of Ergosterol in Relation to the Photosynthetic Formation of Vitamin D. by Richard A. Morton, I. Heilbron, and E. D. Kamm, Journal of the Chemical Society, August, 1927, page 2000.

Calcium as a Food and the Relation of Its Assimilation to Ultra-violet Radiations.

"Our experimental work has been confined to the use of ultra-violet rays as generated by the quartz mercury vapor lamp, and to sunlight. In general we have found the former the most efficient, and an analysis of the situation has led us to conclude that it is the middle region of the ultra-violet spectrum, carrying rays of the approximate wave length of 250 to 302 millimicrons, which contains the beneficial radiations. In fact, there have been reported certain data which suggest, not only that sunlight has little activity, due to its low content of ultra-violet rays, but apparently some of its active rays are neutralized by the effect of other rays which predominate. However, it is not to be inferred from this that sunlight is always to be considered inferior in actinotherapy. Light, visible and invisible, is too complex an agent to allow us to indulge in such extreme generalizations at this stage of our experience.

"How ultra-violet rays can act in connection with calcium assimilation we do not know specifically, but we do know that, under certain conditions, not only can calcium not be assimilated from the food, no matter how abundant it may be therein, but whatever calcium may have been already assimilated and built into body tissue cannot even be retained in the absence of these radiations.

"With these possibilities demonstrated for the radiations from the quartz mercury vapor lamp, we begin to suspect that in our original goat experiments sunlight

possibly exerted an effect, not only through the medium of the ration, but also upon the animal directly. In general, however, we have found sunlight rather inefficient when compared with the quartz mercury vapor light as an antirachitic agent.

"The factor of light acting directly upon the animal was an important factor in our early goat experiments. Though it had been suspected for ages that light has a curative effect upon rickets, it remained for Hulschinsky in 1919 to demonstrate that radiations from the quartz mercury vapor lamp are active in this capacity. Later, Hess in 1921 showed that the ultra-violet of sunlight is likewise effective. All of these experiments were carried out with young animals, and it wasn't until our work with mature goats that we received an appreciation of the fact that ultra-violet rays, whether from the sun or from a quartz mercury vapor lamp, are effective in exerting a favorable influence upon the calcium metabolism of the adult animal as well.

"I have already stated that the antirachitic action of light is brought about through its action upon the inactive, antirachitic vitamin-D."

—By Prof. H. Steenbock, Madison, Wis., University of Wisconsin College of Agriculture. Taken from Physical Therapeutics, Vol. XLIV., No. 5, May, 1926, Page 272.

To Be Continued in the February Issue

WATER-COOLED RAYS ARE "SURGICAL" ULTRA-VIOLET

The water-cooled ultra-violet is a suregon's lamp, since it is dominantly bactericidal. One of the first lessons learned by Koch in his study of the tubercular bacilli was that a short exposure to the sun's rays destroyed its activity. The late Dr. Gorgas believed that any stream of water that ran for as much as fifteen miles, fully exposed to the sun's rays was fairly safe for drinking purposes. During the World War, the typhoid vaccine used in immunizing the soldiers was all sterilized by passing it fifteen times around an ultra-violet uviarc.

These examples should be sufficient to convince the most skeptical that the virtue of ultra-violet rays is not over-estimated.

All surfaces to be treated must first of all be cleansed of pus, serum, etc. All discharges must be removed before applying the lamp. When this is carried out and the lamp is working efficiently, results will be positive.

We can enhance the action of the rays by using some form of photosensitive agent that will carry the rays into recesses that could not otherwise be reached. Such agents are 10 per cent aqueous solutions of resorcin painted on the surface to be treated, or peroxide of hydrogen. These do not stain, and they leave no trace after the wound is healed. Both have also some action on the bacteria present.

In cavities we may use the same strength of aqueous solutions, or glycerine solutions, of any of the aniline dyes, such as carbol-fuchsin, gentian violet, bril-

Don't Disillusion Him

Daughter: "He says he thinks I'm the nicest girl in town. Shall I ask him to call?"

Mother: "No, dear; let him keep on thinking so."—Literary Digest.

ULTRA-VIOLET THERAPY IN GYNECOLOGY

Inflammatory lesions of the external genitals: eczemas of the vulva, intertrigo, furunculosis, herpes genitalis, as well as acute and chronic stages of vulvitis, with inflammatory diseases of the vagina, give very satisfactory results when treated with Ultra-violet.

Erosions of the cervix uteri are also treated successfully by vaginal Ultra-violet irradiation, while inflammatory diseases of the uterus, endometritis and metritis are given other light and heat therapy in addition. Inflammations of the adnexa require frigotherapy in the acute stage; when the patients are no longer feverish, systemic heat treatment is begun.

Excellent results are also obtained in the case of menstrual anomalies, especially amenorrhoea and dysmenorrhoea. In these medication therapy must be used conjointly. It is of great importance that, besides local applications of light and heat, systemic treatment is not neglected.

Light and Heat in Gynaecology.
Dr. Wilhelm Flaskamp.

The British Journal of Actinotherapy, November, 1928.
Page 151.

ULTRA-VIOLET IS INDICATED IN TREATMENT OF PULMONARY TUBERCULOSIS

The author started with Rollier's system of dosage. Encouraged by the fact that no disasters occurred he discarded this method and proceeded to full body exposures from the beginning. Ery-

thema is avoided and pigmentation is welcomed. There is no definite system of breaks, the prolongation of the treatment depending on the patient. In-patients are treated five times a week, out-patients three times a week.

25 patients were sputum positive while under treatment. Of these 25 sixteen had a surgical lesion and nine had some other condition such as diabetes.

25 Positive Sputum Cases Temperature—

18 were afebrile and remained afebrile	72%
5 febrile cases became afebrile	20%
2 remained febrile	8%

Weights—

15 gained an average of 11.3 lbs.	60%
4 lost an average of 6 lbs.	16%
4 remained stationary	16%
2 could not be weighed	

Sputum—

9 of the positive cases became negative.

Chronic pulmonary tuberculosis with a low degree of toxæmia, whether associated with surgical tuberculosis or not, may safely be treated with artificial ultra-violet radiation, and good results may be anticipated, though the greatest caution is essential, and no case should be treated unless facilities for frequent pathological, radiographic and clinical examination are possible.

Ultra-violet Radiation in the Treatment of Chronic Pulmonary Tuberculosis.

M. Weinbren, M.R.C.S., B.Sc., D.M.R.E.

The British Journal of Actinotherapy, November, 1928,
Page 157.

Books on Physio-Therapy

The books listed below may be purchased direct from the Burdick Corp.

Herman Goodman, B. S., M. D.—Basis of Light in Therapy, second edition, enlarged and rewritten. Price \$5.00.

Percy Hall, M. R. C. S. (Eng.) L. R. C. P. (Lond.) New edition of Ultra-Violet Rays in the Treatment and Cure of Disease. Revised and rewritten. Price, postpaid, \$4.50.

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THE EFFECT OF SUNLIGHT UPON THE MENTALITY OF CHILDREN

Sunlight increases mental activity. Subjectively, anyone who is using his brain to any extent while undergoing a series of exposures to light is conscious that his mind is more acute and his brain power increased. Objectively, it has been proved by the following experience; Mental tests were applied to children in special schools, on the one hand in London, and on the other at Alton. It was found that the children at Alton were mentally nearly a year in advance of the London children. After a critical and scientific inquiry, the conclusion arrived at was that the superiority of the Alton children was due to the sunlight treatment received in that hospital. While the increase in physical development would be likely to cause improved mental activity, it was considered that it would be unlikely that this was the full explanation of the mental superiority of the Alton children. The interesting theory was advanced by Sir Henry Guavain that the ultra-violet radiation might improve the nutrition of the gray matter of the brain even as it induced bone repair in the case of rickets.

A healthy body has an important, if not basic, influence in the determination of the child's behavior, its character and psychology in general. Hence, is it not a logical inference that we should approach the psychology of the child by rendering the body healthy, curing it of any disease present or increasing its resistance to any which might threaten it?

Wherever heliotherapy has been

practiced—and this is where children are being treated by sunshine, artificial or natural—the effect on their mentality is marvelous. Their very nature seems to change. Fretfulness vanishes and a happy cheeriness replaces it. Irritability flies away and a bright good nature takes its place. Among the diseases in which I have observed this are, impetigo, chilblains, acne, eczema, psoriasis, and other skin diseases, surgical tuberculosis, and rickets, tuberculous glands and peritonitis, infantile paralysis, rheumatism, "growing pains," ear discharge, hay-fever and infantile syphilis. This list by no means exhausts the diseases benefited by ultra-violet radiation. That there are many other conditions such as convalescence from illness and diseases in which benefit could be obtained from sunlight, is obvious from what I have said. Not only in disease itself, but in conditions midway between health and disease, has sunlight proved to be of well-nigh miraculous power.

To the child who is never very ill, never very well, often ailing with no definite illness, but usually troublesome, capricious, and fretful; to the child for whom the doctor almost in despair recommends a "change of air, preferably the seaside," sunlight, natural or artificial, opens the gate of the high road to health.

The Effect of Sunlight on the Psychology of the Child.

F. Howard Humphris, M. D.

Clinical Medicine and Surgery, Sept., 1928, Page 678.



Don't Does 'Em.

Over back roads, bumpy beyond description, in a desolate section of Virginia, the woman had been driving for hours. At last she emerged to a State highway, where a garage with its welcoming gas-tank stood in view.

A dorky in a crumpled pair of overalls stood grinning beside the tank.

"Do you fix flat tires?" the woman fairly shouted as she just about pushed the ramshackle car the last few inches.

"I don't does it," came the crooning reply, "but I does have 'em did."—New York Sun.

Sole of Her Foot

First Doc—"You look worried."

Second Ditto—"I am. I have a very puzzling case. A flapper wants to be vaccinated and insists I vaccinate her where it won't show."—Cincinnati Enquirer.

Another Scotch Story

Old Farmer Tightmoney wasn't exactly stingy, but mighty economical. One day he fell into the cistern. The water was over his head and cold, but he could swim. His wife, attracted by his cries, yelled excitedly down to him: I'll ring the dinner bell so the boys will come home and pull you out."

"What time is it?" the farmer called up.

"'Bout eleven o'clock."

"No, let 'em work till dinner time, I'll just swim around till they come."—Christian Herald.

An Owlful Sound

The Englishman sat suddenly bolt upright. "My word!" he gasped, "W'at was that?"

"It's an owl," answered the guide.

"Yes, I know jolly well it was an 'owl," returned the Briton; "But w'at in 'eaven's name was 'owlin' "—Science News Letter.

Change to Murads

Actress: "I'm ruined! I'm ruined! Look at this newspaper."

Friend: "Have they published some scandal about you?"

Actress: "Worse than that. I signed a testimonial stating that I always smoked Mildwhiff Cigarettes because they never bothered my throat; and I signed another testimonial that I always use Lymphatic Lozenges to protect my throat after smoking; and here they are, both on the same page!"—Life.

A Few Feet Make a Difference

"Say, pop, what do you call a man who drives an automobile?"

Father—"It all depends on how close he comes to me."

Please Use Your Influence

Father—"Young man, I understand you have made advances to my daughter."

Young Man—"Yes, I wasn't going to say anything about it, but since you have mentioned it, I wish you could get her to pay me back."—United Churchman.

Editorial

(The Burdick Corporation assumes no responsibility at all for the sentiments expressed on this page. They are the opinions of an individual and should be so regarded.)

DOCTOR'S OPPORTUNITY TO PRESERVE HEALTH OF MOTHER AND BABE

While riding on the train the other day, I happened to be seated beside a young mother. She told me that she was having a great deal of trouble with her teeth since her baby came. "Why I've had to have eight fillings just since the baby was born," she said, "and my dentist tells me that if I had been given Ultra-violet treatments before Jane came, I wouldn't have had a bit of trouble. You know I can hardly forgive my doctor for not telling me about it."

"And isn't June a splendid looking baby? She has had sunbaths for several weeks and I've arranged with our new doctor for her to be treated with Ultra-violet all during this winter. My husband and I surely want to do everything we can to help her grow straight and strong. We aren't going to take any chances."

Doctors do have a great opportunity to serve their patients during the period of pregnancy and afterwards during the period of lactation. In the care of the baby after its birth they have an opportunity to prevent the devel-

opment of rickets. If every doctor would fully grasp these opportunities, much of the danger of motherhood would be abolished, and many more children would grow up with undeformed bodies—perfect little physiques.

Many mothers suffer from osteomalacia, loss of teeth, and eclampsia, who could have had a perfectly normal pregnancy if their family physician had realized the benefit of Ultra-violet and had given it to them. Many babies are deprived of the benefit of breast milk because the value of Ultra-violet in increasing and prolonging lactation was not known.

Many babies have crooked legs, pot bellies, carious teeth and misshapen mouths because someone didn't realize the value of prophylaxis in rickets. Though you can cure rickets after it has developed, you can seldom change the deformities which accompany the condition once they are established.

The doctor who does not use Ultra-violet in these conditions is doing a great injustice to his patients. He is keeping from them one of the greatest means of easing the most trying experiences of their lives, and he is sending many of them to quacks and irregulars to get what he does not give.

THE OPEN-MIND

The world needs people with open minds—people who will put their prejudices into cold storage long enough to take a look at both sides of a question—people who will really bother to THINK.

We have been watching a great presidential campaign. During this campaign how many of us laid aside our personal prejudices long enough, to really weigh the issues before us? How many of us let our particular notion of some point at issue blind us to all facts on the other side of the question? How many of us carefully analyzed each issue, lined up the points, good and bad, on each side and placed a value upon each of them before forming our opinions? The fact that prejudice might conceivably have led us to the same conclusion that reason does, is entirely beside the point.

Men with open minds think and analyze with an attempt to be mentally fair and square. Men with closed minds see only what they want to see. They look at a question with their prejudiced eyes, see one little point, and say, "This is enough! I will see no more."

It is easy to have closed minds. Animals do, and find them no bother at all. It takes work to think, yet that is the price a man pays to raise himself above the "common herd." Our great leaders today, as well as in the past, have been men with open minds.

Many people make it a practice to work upon the closed mind. By a clever word, an implication, a witicism or a suggestion they appeal to the pet prejudice of the unthinking. The man with the open mind is not carried along by these appeals. He sees through the covert suggestions and is able to discern the truth.

Open minded men are far too few today. In every walk of life we find men who will pass judgment without a hearing; men who will fight an issue which they know nothing about, because it is new; men who will believe as their fathers did because they are too lazy to form an independent judgment; men who believe as their associates do simply because they are afraid of public opinion.

The world needs men with thinking minds; men who are fair and just in their own mental processes; men, who because they think, will be able to guide the thought of the world fairly and squarely, without appeal to prejudice, but with challenge to reason.

We are glad that Mr. Hoover was elected to the presidency of the United States. We believe that he is a man with an open mind—a man who thinks broadly and deeply, and that he will lead this nation away from petty prejudices and sectional differences, and toward greater national unity. We believe that at the end of his term of office Mr. Hoover will be classed as another great open-minded leader of men.

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